



**eCry3.1Ab (Entrez® Accession Number ADC30135): Assessment of Amino Acid Sequence Similarity to Known or Putative Toxins**

<b>Data Requirement(s):</b>	Not applicable
<b>Author(s):</b>	Scott McClain
<b>Study Completion Date:</b>	March 15, 2011
<b>Performing Laboratory:</b>	Syngenta Crop Protection, LLC Product Safety 3054 East Cornwallis Road Research Triangle Park, NC 27709-2257 USA
<b>Syngenta Study No.:</b>	Not applicable
<b>Report No.:</b>	SSB-165-11
<b>Task No.:</b>	N/A

**STATEMENTS OF DATA CONFIDENTIALITY CLAIMS**

*The following statement applies to submissions to the United States Environmental Protection Agency (US EPA).*

**Statement of No Data Confidentiality Claim**

No claim of confidentiality is made for any information contained in this report on the basis of its falling within the scope of Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 10 (d) (1) (A), (B), or (C).

**Company:** *Syngenta Seeds, Inc.*

**Company Representative:**



Demetra Vlachos  
*Regulatory Affairs Manager*



Date

These data are the property of Syngenta Seeds Inc. and, as such, are considered to be confidential for all purposes other than compliance with the regulations implementing FIFRA Section 10. Submission of these data in compliance with FIFRA does not constitute a waiver of any right to confidentiality that may exist under any other provision of common law or statute or in any other country.

*The following statement applies to submissions to regulatory agencies and other competent authorities other than the US EPA and all other viewers.*

**This Document Contains Confidential Business Information**

This document contains information that is proprietary to Syngenta and, as such, is considered to be confidential for all purposes other than compliance with the relevant registration procedures.

Without the prior written consent of Syngenta, this information may (i) not be used by any third party including, but not limited to, any other regulatory authority for the support of regulatory approval of this product or any other product, and (ii) not be published or disclosed to any third party including, but not limited to, any authority for the support of regulatory approval of any products.

Its submission does not constitute a waiver of any right to confidentiality that may exist in any other country.

© 2011. Syngenta. All Rights Reserved

**STATEMENT CONCERNING GOOD LABORATORY PRACTICES STANDARDS**

This is not a study as defined by 40 CFR Part 160.3 and is therefore not subject to Federal Insecticide, Fungicide, and Rodenticide Act Good Laboratory Practices Standards (GLPS). However, all components of this analysis were performed according to accepted scientific practices, and relevant records have been retained.

**Study Director:**



Scott McClain  
*Technical Expert, Toxicology and Health Science*  
 Product Safety  
 Syngenta Crop Protection, LLC

March 15, 2011

Date

**Submitted by:**

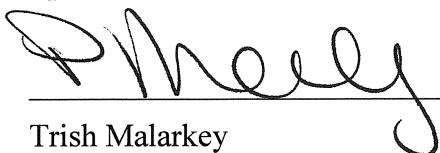


Demetra Vlachos  
*Regulatory Affairs Manager*  
 Syngenta Seeds, Inc.  
 3054 East Cornwallis Road  
 PO Box 12257  
 Research Triangle Park, NC 27709-2257, USA

March 15, 2011

Date

**Sponsor:**



Trish Malarkey  
*Head of NAFTA Product Safety*  
 Syngenta Crop Protection, LLC  
 Product Safety  
 410 Swing Road  
 Post Office Box 18300  
 Greensboro, NC 27419-8300 USA

March 15, 2011

Date

**TABLE OF CONTENTS**

<b>STATEMENT CONCERNING GOOD LABORATORY PRACTICES STANDARDS .....</b>	<b>3</b>
<b>LIST OF FIGURES.....</b>	<b>5</b>
<b>LIST OF ACRONYMS AND ABBREVIATIONS .....</b>	<b>6</b>
<b>SUMMARY.....</b>	<b>7</b>
<b>INTRODUCTION .....</b>	<b>8</b>
<b>MATERIALS AND METHODS .....</b>	<b>8</b>
Sequence Similarity Search.....	8
Assessment of the Significance of Sequence Similarity .....	9
Analysis of Sequences Showing Significant Similarity to the eCry3.1Ab Amino Acid Sequence ...	9
<b>RESULTS AND DISCUSSION.....</b>	<b>10</b>
<b>CONCLUSIONS.....</b>	<b>11</b>
<b>RECORDS RETENTION .....</b>	<b>11</b>
<b>CONTRIBUTING SCIENTISTS .....</b>	<b>11</b>
<b>REFERENCES.....</b>	<b>11</b>
<b>APPENDICES .....</b>	<b>13</b>
<b>APPENDIX A .....</b>	<b>13</b>
<b>APPENDIX B .....</b>	<b>56</b>
<b>APPENDIX C .....</b>	<b>57</b>
<b>APPENDIX D .....</b>	<b>58</b>
<b>APPENDIX E.....</b>	<b>59</b>

**LIST OF FIGURES**

Figure 1. Amino acid sequence of eCry3.1Ab .....	8
--	---

## LIST OF ACRONYMS AND ABBREVIATIONS

BLASTP	Basic Local Alignment Search Tool for Proteins
BLOSUM62	Blocks Substitution Matrix62
Cry1Ab	Cry1Ab protein
eCry3.1Ab	eCry3.1Ab protein
<i>E</i> -value	Expectation value
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GLPS	Good Laboratory Practice Standards
mCry3A	modified Cry3A protein
NCBI	National Center for Biotechnology Information
US EPA	United States Environmental Protection Agency
®	Registered trademark

**SUMMARY**

The Basic Local Alignment Search Tool for Proteins program was used to search the National Center for Biotechnology Information Entrez® Protein Database to determine whether the eCry3.1Ab protein (eCry3.1Ab) amino acid sequence showed significant similarity to known or putative toxins. The threshold value for determining significance of matches was based on searches conducted with randomly shuffled sequences of the amino acids comprising eCry3.1Ab. There were 550 protein sequences identified as having significant sequence similarity to eCry3.1Ab; however, none of these proteins were known or putative toxins.

## INTRODUCTION

The purpose of this study is to determine whether the eCry3.1Ab protein (eCry3.1Ab) amino acid sequence has significant similarity with proteins that are known or putative toxins.

The eCry3.1Ab protein is an engineered chimera of two *Bacillus thuringiensis*-derived Cry proteins, modified Cry3A (mCry3A) and Cry1Ab. The eCry3.1Ab protein is active against certain corn rootworm (*Diabrotica*) species and related coleopteran species.

The eCry3.1Ab amino acid sequence was systematically compared with the latest posting of the National Center for Biotechnology Information (NCBI) Entrez® Protein Database (NCBI 2011). This procedure identified (1) whether any proteins in the database showed significant similarity to the eCry3.1Ab amino acid sequence (*i.e.*, alignments with Basic Local Alignment Search Tool for Proteins [BLASTP] Expectation values [*E*-values] below an established threshold), indicating that the amino acid sequence might be closely related to the eCry3.1Ab amino acid sequence, and (2) whether any proteins showing sequence similarity to the eCry3.1Ab amino acid sequence were known or putative toxins.

## MATERIALS AND METHODS

### Sequence Similarity Search

The BLASTP program (Altschul *et al.* 1997) was used to search the NCBI Entrez® Protein Database with the eCry3.1Ab amino acid sequence as the query sequence (653 amino acids, Entrez® Database Accession No. ADC30135, GenInfo Identifier 284930099 [NCBI 2011] [Figure 1]).

**Figure 1. Amino acid sequence of eCry3.1Ab**

```

1 MTSNGRQCAG IRPYDGRQQH RGLDSSTTKD VIQKGISVVG DLLGVVGFPF GGALVSFYTN
61 FLNTIWPSD PWKAFMEQVE ALMDQKIADY AKNKALAEQ GLQNNVEDYV SALSSWQKNP
121 AAPFRNPHSQ GRIREFLSQA ESHFRNSMPS FAISGYEVLF LTTYAQAAANT HFLFLKDAQI
181 YGEEWGYEKE DIAEFYKRQL KLTQEYTDHC VKWYNVGLDK LRGSSYESWV NFNRYRREMT
241 LTVLDLIALF PLYDVRLYPK EVKTELTRDV LTDPIVGVNN LRGYGTTFSN IENYIRKPHL
301 FDYDLHRIQFH TRFQPGYYGN DSFNYSWNGY VSTRPSIGSN DIITSPFYGN KSSEPVQNLE
361 FNGEKVYRAV ANTNLAVWPS AVYSGVTKVE FSQYNDQTDE ASTQTYDSKR NVGAVSWDSI
421 DQLPPETTDE PLEKGYSHQL NYVMCFLMQG SRGTIPVLTW THKSVDFNM IDSKITQLP
481 LTKSTNLGSG TSVVKGPGFT GGDILRRTSP GQISTLRVNI TAPLSQRYRV RIRYASTTNL
541 QFHTSIDGRP INQGNFSATM SSGSNLQSGS FRTVGFTTPF NFSNGSSVFT LSAHVFNSGN
601 EVYIDRIEFV PAEVTFEAEY DLERAQKAVN ELFTSSNQIG LKTDVTDYHI DQV

```

The NCBI Entrez® Protein Database was used to identify the potential similarity between the query protein amino acid sequence and known or putative toxins. For this analysis, the NCBI Entrez® Protein Database (containing 13,043,846 protein sequences) was accessed on February 23, 2011. The BLASTP is a program used to search protein sequences for sequence similarities. Most proteins are modular in nature and contain repeating functional domains. Similarly, functional domains are conserved across different proteins from different species. The BLASTP algorithm is optimized to identify these domains or shorter sequence similarities present within the full length query



sequence; as a result, this approach detects more similarities than would a search started by aligning two sequences over their entire length. The BLASTP program, version blastp 2.2.8 [Jan-05-2004], was used to perform the similarity searches with the following default parameters:

Low complexity filter

$E$ -value = 10

Word size = 3

Gap costs: existence = 11 and extension = 1

Similarity matrix: Blocks Substitution Matrix (BLOSUM62)

The  $E$ -value is a measure of the probability that matches between sequences occurred by chance. Search results involving comparisons between proteins with highly similar sequences yield  $E$ -values approaching zero; the probability that sequence similarities occurred by chance increases with higher  $E$ -values (Ponting 2001). The search identified all sequences in the database with search results yielding an  $E$ -value of 10 or lower.

### **Assessment of the Significance of Sequence Similarity**

A threshold below which similarity to the query sequence is considered significant, and not the result of random similarity in amino acid composition, is required for meaningful analysis of database alignments. To assess the significance of sequence similarity to the eCry3.1Ab amino acid sequence, additional searches were conducted with shuffled versions of the eCry3.1Ab amino acid sequence. Five shuffled sequences were created through random shuffling of the eCry3.1Ab amino acid sequence using the modern version of the Fisher-Yates shuffle (Knuth 1998).

The resulting shuffled sequences all had the same amino acid composition as eCry3.1Ab (*i.e.*, the same number of residues of each specific amino acid), but were unlikely to have amino acid sequences similar to those of either eCry3.1Ab or other proteins found in the NCBI Entrez® Protein Database. Searches using these shuffled sequences provided an estimate of the background incidence of alignments that would be expected for any sequence with the same amino acid composition as eCry3.1Ab. Searches with the five shuffled versions of the eCry3.1Ab amino acid sequence identified sequences with search results yielding  $E$ -values that ranged from 0.079 - 7.4; therefore, the threshold  $E$ -value for significant amino acid sequence similarity to eCry3.1Ab was considered to be 0.079. Sequences with significant similarity to the eCry3.1Ab amino acid sequence (*i.e.*,  $E$ -values less than 0.079) were evaluated for source organism and biological function.

### **Analysis of Sequences Showing Significant Similarity to the eCry3.1Ab Amino Acid Sequence**

The identity and biological function, if known, were determined for each protein identified in the BLASTP search as having significant similarity to the eCry3.1Ab amino acid sequence (*i.e.*,  $E$ -value less than 0.079). The NCBI Entrez® Protein Database records were accessed, if needed, using the Entrez® Accession Numbers. If an entry in the NCBI Entrez® Protein Database record was vague (*e.g.*, “hypothetical protein”), the

individual record and supporting literature were examined in an attempt to clarify the identity and/or function of the protein associated with that record.

## RESULTS AND DISCUSSION

The NCBI Entrez® Protein Database search identified 550 sequences with significant similarity to the eCry3.1Ab amino acid sequence (*i.e.*, *E*-values less than 0.1) (Appendix A). These sequences were grouped into categories. None of the 550 alignments described in this analysis are known toxins to humans or mammals.

Of the 550 alignments, there were 505 proteins from 15 species identified as known or putative delta-endotoxin proteins (also known as Cry proteins or insecticidal crystal proteins); included in this count were alignments to synthetic Cry protein constructs. The *E*-values for alignments between these sequences and the eCry3.1Ab amino acid sequence ranged from 0 to 0.0355. Appendix B shows the source organisms for these proteins.

Additional alignments to 26 proteins from 6 species were identified as hypothetical or unknown proteins of unspecified function. The *E*-values for alignments between these sequences and the eCry3.1Ab amino acid sequence ranged from  $2.8 \times 10^{-15}$  to 0.0605. Appendix C shows the source organisms for these proteins. None of these proteins are known or putative toxins.

Additional alignments to 16 parasporin proteins from *Bacillus thuringiensis* were identified. The term parasporin is defined as *Bacillus thuringiensis* and related bacterial parasporal proteins that are non-hemolytic but capable of preferentially killing cancer cells (Yamashita *et al.* 2005). A classification and nomenclature scheme similar to that of Cry proteins has now been developed for parasporins (Ohba *et al.* 2006); however, several proteins described in this search still retain their Cry nomenclature names. The parasporins have not been shown to have insecticidal activity to date. They have been shown to have *in vitro* cytotoxic activity against sensitive cells derived from cancer cell lines, but low or no toxicity to other normal human or mammalian cell lines (Mizuki *et al.* 2000, Katayama *et al.* 2005, Yamashita *et al.* 2005). There are no published reports of *in vivo* parasporin toxicity to humans or mammals. The *E*-values for alignments between these sequences and the eCry3.1Ab amino acid sequence ranged from  $1.1 \times 10^{-54}$  to  $5.1 \times 10^{-9}$ . Appendix D shows the source organism for these proteins.

Additional alignments to 2 proteins from 2 species were identified as twin arginine translocation pathway signal proteins. The *E*-values for alignments between these sequences and the eCry3.1Ab amino acid sequence ranged from 0.002 to 0.0464. Appendix E shows the source organisms for these proteins. Neither of these proteins are known or putative toxins.

An additional single alignment to a protein from *Bacillus thuringiensis* was identified as fructose-6-phosphate amidotransferase; the amidotransferase protein aligns with the eCry3.1Ab sequence in a region that is described as a delta endotoxin domain. The *E*-

value for the alignment between this sequence and the eCry3.1Ab sequence was  $1.12 \times 10^{-72}$ .

## CONCLUSIONS

The results of a comprehensive amino acid similarity search of the NCBI Entrez® Protein Database support the conclusion that the eCry3.1Ab amino acid sequence shows no significant similarity with any known or putative toxins that affect human or mammalian health.

## RECORDS RETENTION

Raw data, the original copy of this report, and other relevant records are archived at Syngenta Biotechnology, Inc., 3054 East Cornwallis Road, Research Triangle Park, NC 27709-2257, USA.

## CONTRIBUTING SCIENTISTS

The analytical work reported herein was conducted by Scott McClain Ph.D. This work was conducted at Syngenta Crop Protection, LLC.

## REFERENCES

- Altschul SF, Madden TL, Schäffer AA, Zhang J, Zhang Z, Miller W, Lipman DJ. 1997. Gapped BLAST and PSI-BLAST: a new generation of protein database search programs. *Nucleic Acids Res* 25:3389–3402.
- Katayama H, Yokota H, Akao T, Nakamura O, Ohba M, Mekada E, Mizuki E. 2005. Parasporin-1, a novel cytotoxic protein to human cells from non-insecticidal parasporal inclusions of *Bacillus thuringiensis*. *J Biochem* 137:17–25.
- Knuth DE. 1998. *The Art of Computer Programming, Vol. 2*, 3<sup>rd</sup> ed. Reading, MA: Harlow: Addison-Wesley. pp. 145–146.
- Mizuki E, Park YS, Saitoh H, Yamashita S, Akao T, Higuchi K, Ohba M. 2000. Parasporin, a human leukemic cell-recognizing parasporal protein of *Bacillus thuringiensis*. *Clin Diagn Lab Immunol* 7:625–634.
- NCBI. 2011. Entrez® Protein database. Bethesda, MD: National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health. <http://www.ncbi.nlm.nih.gov/sites/entrez?db=Protein> (accessed February 23, 2011).
- Ohba M, Mizuki E, Crickmore N, Cote JC, Nagamatsu Y, Kitada S, Sakai H, Harata K, Shin T. 2006. Parasporin nomenclature. <http://parasporin.fitc.pref.fukuoka.jp/>
- Ponting C. 2001. Issues in predicting protein function from sequence. *Brief Bioinform* 2:19–29.
- US EPA. 1989. Good Laboratory Practice Standards. 40 CFR Part 160.3.

Yamashita S, Katayama H, Saitoh H, Akao T, Park YS, Mizuki E, Ohba M, Ito A. 2005. Typical three-domain Cry proteins of *Bacillus thuringiensis* strain A1462 exhibit cytotoxic activity on limited human cancer cells. *J Biochem* 138:663–672.

## APPENDICES

### APPENDIX A. All sequences showing significant similarity to eCry3.1Ab amino acid sequence in a BLASTP analysis of the NCBI Entrez® Protein Database

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
1	NR gi 284930099 gb ADC30135.1  eCry3.1Ab engineered Bt hybrid insecticidal protein [synthetic construct]	653	0	1 - 653 (15.31%)
2	NR gi 471281 emb CAA51996.1  CryIIIA insecticidal crystal protein [synthetic construct]	592	0	23 - 614 (14.58%)
3	NR gi 208153 gb AAA73184.1  crystal toxin [synthetic construct] >gnl BL_ORD_ID 1107429 cryIIIA insect control protein [synthetic construct]	589	0	23 - 611 (14.73%)
4	NR gi 61221657 sp P0A379.1 CR3AA_BACTT RecName: Full=Pesticidal crystal protein cry3Aa; AltName: Full=73 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIIA(a); Flags: Precursor >gnl BL_ORD_ID 968334 RecName: Full=Pesticidal crystal protein cry3Aa; AltName: Full=73 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIIA(a); Flags: Precursor >gnl BL_ORD_ID 968334 RecName: Full=Pesticidal crystal protein cry3Aa; AltName: Full=73 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIIA(a); Flags: Precursor >gnl BL_ORD_ID 968334 unnamed protein product [Bacillus thuringiensis] >gnl BL_ORD_ID 968334 crystal protein [Bacillus thuringiensis serovar morrisoni] >gnl BL_ORD_ID 968334 insecticidal crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 968334 CryIIIA [Bacillus thuringiensis] >gnl BL_ORD_ID 968334 Cry3A [Bacillus thuringiensis serovar tenebrionis] >gnl BL_ORD_ID 968334 insecticidal crystal protein >gnl BL_ORD_ID 968334 coleopteran specific protein	589	0	23 - 611 (14.73%)
5	NR gi 142734 gb AAA22336.1  delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 822726 Cry3Aa protein [Bacillus thuringiensis]	589	0	23 - 611 (14.73%)
6	NR gi 45934892 gb AAS79487.1  insecticidal crystal protein [Bacillus thuringiensis]	589	0	23 - 611 (14.70%)
7	NR gi 143084 gb AAA22542.1  insect control protein [Bacillus thuringiensis]	589	0	23 - 611 (14.70%)
8	A Chain A, Crystal Structure Of Insecticidal Delta-Endotoxin From Bacillus Thuringiensis At 2.5 Angstroms Resolution	585	0	27 - 611 (14.82%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
9	NR gi 52145404 gb AAU29411.1  Cry3Aa protein [Bacillus thuringiensis]	589	0	23 - 611 (14.61%)
10	NR gi 58826238 gb AAW82872.1  Cry3 delta endotoxin [Bacillus thuringiensis serovar tenebrionis]	589	0	23 - 611 (14.61%)
11	NR gi 8469161 sp Q45744.1 CR3CA_BACTK RecName: Full=Pesticidal crystal protein cry3Ca; AltName: Full=73 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIIC(a) >gnl BL_ORD_ID 935915 CryIIID [Bacillus thuringiensis serovar kurstaki]	598	0	23 - 613 (11.61%)
12	NR gi 8469155 sp Q06117.1 CR3BB_BACTU RecName: Full=Pesticidal crystal protein cry3Bb; AltName: Full=74 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIIB(b) >gnl BL_ORD_ID 727747 cryIIIB2 [Bacillus thuringiensis]	597	0	23 - 614 (11.03%)
13	NR gi 940200 gb AAA74198.1  Cry3Bb2 [Bacillus thuringiensis]	597	0	23 - 614 (10.97%)
14	NR gi 117324 sp P17969.1 CR3BA_BACTO RecName: Full=Pesticidal crystal protein cry3Ba; AltName: Full=75 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIIB(a) >gnl BL_ORD_ID 1103854 unnamed protein product [Bacillus thuringiensis]	596	0	23 - 613 (11.04%)
15	A Chain A, Crystal Structure Of The Insecticidal Bacterial Del Endotoxin Cry3bb1 Bacillus Thuringiensis	590	0	30 - 614 (11.15%)
16	NR gi 70673280 gb AAZ06794.1  truncated insecticidal active protein Cry1Ab [Bacillus thuringiensis serovar tolworthi]	613	0	57 - 653 (8.52%)
17	NR gi 82395049 gb ABB72460.1  insecticidal crystal protein Cry1Ab [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
18	NR gi 37524001 gb AAQ92302.1  truncated CRYIA(b) [synthetic construct]	613	0	57 - 653 (8.52%)
19	NR gi 143099 gb AAA22551.1  insecticidal protein [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
20	NR gi 10440886 gb AAG16877.1  delta endotoxin [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
21	1310234A insect control protein	613	0	57 - 653 (8.52%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
22	NR gi 228943676 ref ZP_04106093.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar berliner ATCC 10792] >gnl BL_ORD_ID 771967 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar thuringiensis str. T01001] >gnl BL_ORD_ID 771967 RecName: Full=Pesticidal crystal protein cry1Ab; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(b) >gnl BL_ORD_ID 771967 RecName: Full=Pesticidal crystal protein cry1Ab; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(b) >gnl BL_ORD_ID 771967 RecName: Full=Pesticidal crystal protein cry1Ab; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(b) >gnl BL_ORD_ID 771967 insecticidal protein P [Bacillus thuringiensis] >gnl BL_ORD_ID 771967 crystal endotoxin Cry1Ab [Bacillus thuringiensis] >gnl BL_ORD_ID 771967 unnamed protein product [Bacillus thuringiensis] >gnl BL_ORD_ID 771967 entomocidal protoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 771967 crystal protein precursor [Bacillus thuringiensis] >gnl BL_ORD_ID 771967 delta-endotoxin [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 771967 crystal protein [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 771967 Cry1Ab [Chloroplast transformation vector pCLT327] >gnl BL_ORD_ID 771967 Cry1Ab [Bacillus thuringiensis serovar aizawai] >gnl BL_ORD_ID 771967 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar thuringiensis str. T01001] >gnl BL_ORD_ID 771967 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar berliner ATCC 10792] >gnl BL_ORD_ID 771967 endotoxin delta 2	613	0	57 - 653 (8.52%)
23	NR gi 40255 emb CAA28405.1  unnamed protein product [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
24	NR gi 159024156 gb ABW87320.1  endotoxin [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
25	NR gi 56900936 gb AAW31761.1  Cry1Ab [Bacillus thuringiensis]	613	0	57 - 653 (8.49%)
26	NR gi 48734426 gb AAT46415.1  parasporal crystal protein [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
27	NR gi 151655610 gb ABS18384.1  delta-endotoxin Cry1Ab [Bacillus thuringiensis]	613	0	57 - 653 (8.52%)
28	NR gi 46409861 gb AAS93798.1  cry1A type crystal protein [Bacillus thuringiensis serovar kenya]	612	0	57 - 653 (8.52%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
29	NR gi 256259702 gb ACU65108.1  insecticidal protein 2 [Bacillus thuringiensis]	613	0	57 - 653 (8.46%)
30	NR gi 228911566 ref ZP_04075355.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2885258 cry1A toxin [Bacillus thuringiensis] >gnl BL_ORD_ID 2885258 Cry [Bacillus thuringiensis] >gnl BL_ORD_ID 2885258 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200]	613	0	57 - 653 (8.49%)
31	NR gi 14190061 gb AAK55546.1 AF375608_1 Cry1Ab16 [Bacillus thuringiensis]	613	0	57 - 653 (8.49%)
32	NR gi 13173238 gb AAK14336.1  insecticidal crystal protein BTRX24 [Bacillus thuringiensis serovar kunthalaRX24]	613	0	57 - 653 (8.46%)
33	NR gi 320090245 gb ADW08761.1  delta-endotoxin Cry1Ab [Bacillus thuringiensis serovar kurstaki]	613	0	57 - 653 (8.49%)
34	NR gi 256259700 gb ACU65107.1  insecticidal protein 1 [Bacillus thuringiensis]	613	0	57 - 653 (8.44%)
35	NR gi 142886 gb AAA22420.1  5.3 class delta endotoxin [Bacillus thuringiensis]	613	0	57 - 653 (8.44%)
36	NR gi 40278 emb CAA31620.1  unnamed protein product [Bacillus thuringiensis]	613	0	57 - 653 (8.44%)
37	NR gi 8469139 sp Q03748.1 CR1AE_BACTL RecName: Full=Pesticidal crystal protein cry1Ae; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(e) >gnl BL_ORD_ID 906768 delta-endotoxin [Bacillus thuringiensis]	613	0	57 - 653 (8.44%)
38	NR gi 61252381 sp P0A369.1 CR1AA_BACTS RecName: Full=Pesticidal crystal protein cry1Aa; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(a) >gnl BL_ORD_ID 977322 insecticidal crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 977322 protein,insecticidal crystal	612	0	57 - 653 (8.57%)
39	NR gi 228969462 ref ZP_04130277.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar sotto str. T04001] >gnl BL_ORD_ID 727346 crystal protein Cry1Aa13 [Bacillus thuringiensis serovar sotto] >gnl BL_ORD_ID 727346 BtT84A1 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 727346 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar sotto str. T04001]	612	0	57 - 653 (8.57%)
40	1409195A 135kD insecticidal protein	612	0	57 - 653 (8.54%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
41	NR gi 61252379 sp P0A367.1 CR1AA_BACTA RecName: Full=Pesticidal crystal protein cry1Aa; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(a) >gnl BL_ORD_ID 857482 delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 857482 unnamed protein product [Bacillus thuringiensis serovar aizawai]	612	0	57 - 653 (8.54%)
42	1304168B endotoxin delta 1	612	0	57 - 653 (8.54%)
43	NR gi 535781 dbj BAA04468.1  insecticidal crystal protein [Bacillus thuringiensis]	612	0	57 - 653 (8.52%)
44	NR gi 6687073 emb CAA70856.1  delta-endotoxin [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 942153 Cry1Ac [Bacillus thuringiensis]	612	0	57 - 653 (8.52%)
45	2013214A lepidopteran-specific protoxin	612	0	57 - 653 (8.52%)
46	NR gi 289657726 gb ADD14591.1  Cry1Aa [Bacillus thuringiensis]	612	0	57 - 653 (8.52%)
47	NR gi 142765 gb AAA22353.1  crystal protein [Bacillus thuringiensis]	612	0	57 - 653 (8.52%)
48	NR gi 61221638 sp P0A366.1 CR1AA_BACTK RecName: Full=Pesticidal crystal protein cry1Aa; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(a) >gnl BL_ORD_ID 914407 RecName: Full=Pesticidal crystal protein cry1Aa; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(a) >gnl BL_ORD_ID 914407 unnamed protein product [Bacillus thuringiensis]	612	0	57 - 653 (8.52%)
49	NR gi 5901703 gb AAD55382.1 AF154676_1 135 kDa insecticidal protein [Bacillus thuringiensis serovar kurstaki]	612	0	57 - 653 (8.49%)
50	NR gi 67089177 gb AAAY66993.1  Cry1Aa [Bacillus thuringiensis]	612	0	57 - 653 (8.49%)
51	NR gi 37781497 gb AAP40639.1  Cry1Aa [Bacillus thuringiensis]	612	0	57 - 653 (8.44%)
52	NR gi 272682862 gb ACT34172.2  Cry1-like delta-endotoxin [Bacillus thuringiensis]	645	0	19 - 653 (7.48%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
53	NR gi 8469136 sp Q03744.1 CR1AD_BACTA RecName: Full=Pesticidal crystal protein cry1Ad; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(d) >gnl BL_ORD_ID 931970 cryIA(d) [Bacillus thuringiensis]	620	0	57 - 653 (7.93%)
54	NR gi 301641366 gb ADK87344.1  delta endotoxin [Bacillus thuringiensis]	647	0	19 - 653 (7.31%)
55	NR gi 189039462 gb ACD75515.1  Cry1Ib-type protein [Bacillus thuringiensis]	647	0	19 - 653 (7.24%)
56	NR gi 8469140 sp Q45709.1 CR1IB_BACTE RecName: Full=Pesticidal crystal protein cry1Ib; AltName: Full=81 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryII(b) >gnl BL_ORD_ID 1047092 cryV465 [Bacillus thuringiensis]	647	0	19 - 653 (7.21%)
57	NR gi 13173240 gb AAK14337.1  insecticidal crystal protein BTRX28 [Bacillus thuringiensis serovar kunthalaRX28]	622	0	57 - 653 (7.94%)
58	NR gi 228911559 ref ZP_04075348.1  Pesticidal crystal protein cry1Bc [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597345 Pesticidal crystal protein cry1Bc [Bacillus thuringiensis IBL 200]	644	0	23 - 653 (7.28%)
59	NR gi 12003323 gb AAG43526.1 AF211190_1 Cry1I [Bacillus thuringiensis]	647	0	19 - 653 (7.29%)
60	NR gi 8469145 sp Q45739.1 CR1BB_BACTU RecName: Full=Pesticidal crystal protein cry1Bb; AltName: Full=140 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIB(b) >gnl BL_ORD_ID 1057090 crystal protein [Bacillus thuringiensis]	644	0	23 - 653 (7.28%)
61	NR gi 8469150 sp Q45774.1 CR1BC_BACTM RecName: Full=Pesticidal crystal protein cry1Bc; AltName: Full=140 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIB(c) >gnl BL_ORD_ID 766866 delta-endotoxin [Bacillus thuringiensis]	644	0	23 - 653 (7.28%)
62	NR gi 300836937 gb ADK38579.1  insecticidal crystal protein Cry1Ib [Bacillus thuringiensis]	647	0	19 - 653 (7.19%)
63	NR gi 300492624 gb ADK23801.1  Cry1I toxin Crystal protein [Bacillus thuringiensis]	647	0	19 - 653 (7.19%)
64	NR gi 159131958 gb ABW88019.1  Cry1Ib-type protein [Bacillus thuringiensis]	647	0	19 - 653 (7.19%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
65	NR gi 8469135 sp P96315.1 CR1AF_BACTU RecName: Full=Pesticidal crystal protein cry1Af; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(f) >gnl BL_ORD_ID 835130 insecticidal crystal protein [Bacillus thuringiensis]	594	0	74 - 653 (8.62%)
66	NR gi 21665941 gb AAM73516.1  Cry [Bacillus thuringiensis]	647	0	19 - 653 (7.05%)
67	NR gi 55583756 gb AAV53390.1  delta endotoxin [Bacillus thuringiensis]	647	0	19 - 653 (7.09%)
68	NR gi 1621216 emb CAA70124.1  Bt toxin [Bacillus thuringiensis]	647	0	19 - 653 (7.09%)
69	NR gi 33325407 gb AAQ08233.1  Cry1Ia [Bacillus thuringiensis]	647	0	19 - 653 (7.07%)
70	NR gi 33326396 gb AAQ08616.1  Cry1Ia [Bacillus thuringiensis]	647	0	19 - 653 (7.07%)
71	NR gi 32260894 emb CAC85964.1  delta-endotoxin [Bacillus thuringiensis serovar kurstaki]	647	0	19 - 653 (7.07%)
72	NR gi 8469149 sp Q45752.1 CR1IA_BACTK RecName: Full=Pesticidal crystal protein cry1Ia; AltName: Full=81 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryII(a) >gnl BL_ORD_ID 1054917 insecticidal protein [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 1054917 Cry1I [Bacillus thuringiensis] >gnl BL_ORD_ID 1054917 Cry1Ia [Bacillus thuringiensis]	647	0	19 - 653 (7.07%)
73	NR gi 14537812 gb AAK66742.1 AF373207_1 Cry1Ia [Bacillus thuringiensis]	647	0	19 - 653 (7.07%)
74	NR gi 3329593 gb AAC26910.1  insecticidal protein [Bacillus thuringiensis serovar kurstaki]	647	0	19 - 653 (7.07%)
75	NR gi 1261624 gb AAB00958.1  CGCryV [Bacillus thuringiensis]	647	0	19 - 653 (7.07%)
76	NR gi 5669035 gb AAD46139.1 AF081790_1 insecticidal crystal protein [Bacillus thuringiensis]	612	0	57 - 653 (8.25%)
77	NR gi 228911584 ref ZP_04075373.1  Pesticidal crystal protein cry1Bc [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 944700 RecName: Full=Pesticidal crystal protein cry1Id; AltName: Full=81 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryII(d) >gnl BL_ORD_ID 944700 insecticidal crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 944700 Pesticidal crystal protein cry1Bc [Bacillus thuringiensis IBL 200]	663	0	3 - 653 (6.85%)
78	NR gi 300089072 gb ADJ67816.1  CryIa fusion protein [synthetic construct]	649	0	17 - 653 (7.17%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
79	NR gi 40290 emb CAA44633.1  delta-endotoxin [Bacillus thuringiensis serovar kurstaki]	647	0	19 - 653 (7.05%)
80	NR gi 540282 gb AAC36999.1  insecticidal protein [Bacillus thuringiensis serovar kurstaki]	647	0	19 - 653 (7.05%)
81	NR gi 294987182 gb ADF56042.1  CryII toxin crystal protein [Bacillus thuringiensis]	647	0	19 - 653 (7.02%)
82	NR gi 106897084 gb ABF83202.1  CryIIa [Bacillus thuringiensis]	647	0	19 - 653 (7.02%)
83	NR gi 143227 gb AAA22613.1  insecticidal endotoxin [Bacillus thuringiensis]	615	0	57 - 653 (8.04%)
84	NR gi 117518746 gb ABK35074.1  insecticidal delta endotoxin [Bacillus thuringiensis]	607	0	56 - 653 (8.28%)
85	NR gi 36244769 gb AAQ85125.1  CryIAb1 [synthetic construct]	582	0	57 - 622 (8.53%)
86	NR gi 169930479 gb ACB05714.1  truncated CryIAb [Bacillus thuringiensis]	585	0	57 - 625 (8.47%)
87	NR gi 208155 gb AAA72985.1  cryIA(a) [synthetic construct] >gnl BL_ORD_ID 1578324 CryIA(a) [synthetic construct]	580	0	57 - 620 (8.53%)
88	NR gi 309320770 gb ADO64601.1  CryIAa [synthetic construct]	580	0	57 - 620 (8.53%)
89	NR gi 13173242 gb AAK14338.1  insecticidal crystal protein BTRX27 [Bacillus thuringiensis serovar kunthalaRX27]	619	0	57 - 653 (7.96%)
90	NR gi 1171233 gb AAA86265.1  CryIA(a) [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 2225232 truncated CryIAa [Bacillus thuringiensis]	585	0	57 - 626 (8.53%)
91	NR gi 209570113 gb ACI62507.1  modified CryIAC [synthetic construct]	584	0	57 - 625 (8.53%)
92	A Chain A, Insecticidal Toxin: Structure And Channel Formation	583	0	57 - 624 (8.53%)
93	NR gi 8927981 sp O87404.1 CR1IC_BACTU RecName: Full=Pesticidal crystal protein cry1Ic; AltName: Full=81 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryII(c) >gnl BL_ORD_ID 959171 crystal protein toxin [Bacillus thuringiensis]	647	0	19 - 653 (6.93%)
94	NR gi 8469152 sp Q9S515.1 CR1AG_BACTU RecName: Full=Pesticidal crystal protein cry1Ag; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(g) >gnl BL_ORD_ID 906219 lepidoteran-specific toxin [Bacillus thuringiensis]	615	0	57 - 653 (7.96%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
95	NR gi 228911573 ref ZP_04075362.1  Pesticidal crystal protein cry1Bc [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597358 Pesticidal crystal protein cry1Bc [Bacillus thuringiensis IBL 200]	640	0	30 - 653 (7.01%)
96	NR gi 8469141 sp Q45715.1 CR1KA_BACTM RecName: Full=Pesticidal crystal protein cry1Ka; AltName: Full=137 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIK(a) >gnl BL_ORD_ID 719293 Cry1K [Bacillus thuringiensis] >gnl BL_ORD_ID 719293 cry1K gene	643	0	23 - 653 (6.80%)
97	NR gi 61252383 sp P0A374.1 CR1BA_BACTE RecName: Full=Pesticidal crystal protein cry1Ba; AltName: Full=140 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIB(a) >gnl BL_ORD_ID 1082389 delta-endotoxin Cry1Ba2 [Bacillus thuringiensis serovar entomocidus] >gnl BL_ORD_ID 1082389 cry1Ba2 [Bacillus thuringiensis]	646	0	23 - 653 (6.54%)
98	NR gi 228943287 ref ZP_04105745.1  Pesticidal crystal protein cry1Bc [Bacillus thuringiensis serovar berliner ATCC 10792] >gnl BL_ORD_ID 2436299 Pesticidal crystal protein cry1Bc [Bacillus thuringiensis serovar thuringiensis str. T01001] >gnl BL_ORD_ID 2436299 Pesticidal crystal protein cry1Bc [Bacillus thuringiensis serovar thuringiensis str. T01001] >gnl BL_ORD_ID 2436299 Pesticidal crystal protein cry1Bc [Bacillus thuringiensis serovar berliner ATCC 10792]	646	0	23 - 653 (6.54%)
99	NR gi 61221651 sp P0A373.1 CR1BA_BACTK RecName: Full=Pesticidal crystal protein cry1Ba; AltName: Full=140 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIB(a) >gnl BL_ORD_ID 824138 unnamed protein product [Bacillus thuringiensis] >gnl BL_ORD_ID 824138 insecticidal protein Cry1Ba5 [Bacillus thuringiensis]	646	0	23 - 653 (6.54%)
100	NR gi 14486714 gb AAK63251.1 AF368257_1 Cry1Ba [Bacillus thuringiensis]	646	0	23 - 653 (6.54%)
101	NR gi 146335684 gb ABQ23438.1  Cry1B [Bacillus thuringiensis]	648	0	23 - 653 (6.55%)
102	NR gi 119087867 gb ABL60921.1  Cry1B [Bacillus thuringiensis]	646	0	23 - 653 (6.52%)
103	NR gi 27447986 gb AAO13756.1 AF288683_1 delta-endotoxin Cry1 [Bacillus thuringiensis]	619	0	56 - 653 (7.46%)
104	NR gi 67973231 gb AAY84151.1  Cry8 [Bacillus thuringiensis]	638	0	29 - 652 (6.53%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
105	NR gi 8469154 sp Q9ZAZ6.1 CR1GB_BACTZ RecName: Full=Pesticidal crystal protein cry1Gb; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIG(b) >gnl BL_ORD_ID 864859 insecticidal crystal protein CryH2 [Bacillus thuringiensis serovar wuhanensis]	619	0	56 - 653 (7.44%)
106	NR gi 78191077 gb ABB29863.1  Snun8-1 [Bacillus thuringiensis]	638	0	29 - 652 (6.49%)
107	NR gi 34495248 gb AAQ73470.1  Cry8Ea1 [Bacillus thuringiensis]	638	0	29 - 652 (6.49%)
108	NR gi 315435773 gb ADU18259.1  crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839274 crystal protein [Bacillus thuringiensis]	254	0	23 - 268 (37.51%)
109	NR gi 8928018 sp Q45704.1 CR8AA_BACUK RecName: Full=Pesticidal crystal protein cry8Aa; AltName: Full=131 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVIII(a) >gnl BL_ORD_ID 972881 CryIII delta-endotoxin [Bacillus thuringiensis]	646	0	28 - 652 (6.66%)
110	NR gi 8469146 sp Q45746.1 CR1GA_BACTU RecName: Full=Pesticidal crystal protein cry1Ga; AltName: Full=132 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIG(a) >gnl BL_ORD_ID 1016200 crystal protein [Bacillus thuringiensis]	611	0	57 - 653 (7.53%)
111	NR gi 158021542 gb ABW08089.1  crystal protein [Bacillus thuringiensis]	638	0	29 - 652 (6.44%)
112	NR gi 8469144 sp Q45738.1 CR1JA_BACTU RecName: Full=Pesticidal crystal protein cry1Ja; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIJ(a) >gnl BL_ORD_ID 1107418 crystal protein [Bacillus thuringiensis]	633	0	30 - 653 (6.84%)
113	NR gi 228911579 ref ZP_04075368.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597364 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200]	633	0	30 - 653 (6.84%)
114	NR gi 170877973 gb ACB38747.1  cry7-like protein [Bacillus thuringiensis]	655	$7.62 \times 10^{-130}$	17 - 653 (6.15%)
115	NR gi 228950175 ref ZP_04112357.1  Pesticidal crystal protein cry7Aa [Bacillus thuringiensis serovar monterrey BGSC 4AJ1] >gnl BL_ORD_ID 2582194 Pesticidal crystal protein cry7Aa [Bacillus thuringiensis serovar monterrey BGSC 4AJ1]	655	$7.62 \times 10^{-130}$	17 - 653 (6.15%)
116	NR gi 315936309 gb AAW81032.2  Cry8 [Bacillus thuringiensis]	649	$9.96 \times 10^{-130}$	22 - 652 (6.46%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
117	NR gi 9087135 sp Q45708.1 CR7AB_BACUK RecName: Full=Pesticidal crystal protein cry7Ab; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVIIA(b) >gnl BL_ORD_ID 753422 CryIII delta-endotoxin [Bacillus thuringiensis]	655	2.90 x 10 <sup>-129</sup>	17 - 653 (6.13%)
118	NR gi 160334204 gb ABX24522.1  Cry7Ab3 delta- endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 909653 Cry7Ab8 protein [Bacillus thuringiensis] >gnl BL_ORD_ID 909653 insecticidal crystal protein Cry7Ab [Bacillus thuringiensis]	655	3.78 x 10 <sup>-129</sup>	17 - 653 (6.13%)
119	NR gi 37729016 gb AAO39720.1  insecticidal crystal protein [Bacillus thuringiensis]	647	8.43 x 10 <sup>-129</sup>	23 - 653 (6.45%)
120	NR gi 22213635 gb AAM93496.1  CryIBII [Bacillus thuringiensis]	649	3.20 x 10 <sup>-128</sup>	23 - 653 (6.24%)
121	NR gi 8469153 sp Q9ZAZ5.1 CR1BD_BACTZ RecName: Full=Pesticidal crystal protein cry1Bd; AltName: Full=140 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIB(d) >gnl BL_ORD_ID 1020272 insecticidal crystal protein CryE1 [Bacillus thuringiensis serovar wuhanensis]	640	5.46 x 10 <sup>-128</sup>	32 - 653 (6.40%)
122	NR gi 62288327 gb AAX78439.1  crystal protein Cry9Db1 [Bacillus thuringiensis]	662	9.32 x 10 <sup>-128</sup>	25 - 652 (6.30%)
123	NR gi 209364666 gb ACI44005.1  insecticidal crystal protein [Bacillus thuringiensis]	655	1.59 x 10 <sup>-127</sup>	17 - 653 (6.08%)
124	NR gi 22122188 dbj BAC07226.1  cry8 [Bacillus thuringiensis serovar galleriae]	630	4.63 x 10 <sup>-127</sup>	28 - 632 (6.50%)
125	NR gi 291297525 gb ADD92572.1  insecticidal crystal protein [Bacillus thuringiensis]	659	1.03 x 10 <sup>-126</sup>	17 - 653 (6.03%)
126	NR gi 27436034 gb AAO13295.1 AF336114_1 crystal delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 1059691 crystal protein [Bacillus thuringiensis]	600	1.35 x 10 <sup>-126</sup>	65 - 653 (7.22%)
127	NR gi 2982744 dbj BAA25298.1  CryINA67-1 [Bacillus thuringiensis]	600	1.35 x 10 <sup>-126</sup>	65 - 653 (7.22%)
128	NR gi 188484664 gb ACD50892.1  Cry1F [Bacillus thuringiensis]	600	1.76 x 10 <sup>-126</sup>	65 - 653 (7.22%)
129	NR gi 8469133 sp O66377.2 CR1FB_BACTM RecName: Full=Pesticidal crystal protein cry1Fb; AltName: Full=132 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIF(b) >gnl BL_ORD_ID 998032 crystal protein Cry1Fb [Bacillus thuringiensis serovar morrisoni]	600	1.76 x 10 <sup>-126</sup>	65 - 653 (7.22%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
130	NR gi 9087134 sp Q45707.1 CR7AB_BACUA RecName: Full=Pesticidal crystal protein cry7Ab; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVIIA(b) >gnl BL_ORD_ID 811956 CryIII delta-endotoxin [Bacillus thuringiensis]	655	$2.30 \times 10^{-126}$	17 - 653 (6.04%)
131	NR gi 46409859 gb AAS93797.1  cry1B type crystal protein [Bacillus thuringiensis serovar kurstaki]	646	$3.00 \times 10^{-126}$	23 - 653 (6.18%)
132	NR gi 8927979 sp O85805.1 CR1BE_BACTU RecName: Full=Pesticidal crystal protein cry1Be; AltName: Full=139 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIB(e) >gnl BL_ORD_ID 832143 Cry1Be1 delta-endotoxin [Bacillus thuringiensis]	646	$3.00 \times 10^{-126}$	23 - 653 (6.18%)
133	NR gi 188484666 gb ACD50893.1  Cry1F [Bacillus thuringiensis]	600	$8.72 \times 10^{-126}$	65 - 653 (7.20%)
134	NR gi 8928019 sp Q45705.1 CR8BA_BACUK RecName: Full=Pesticidal crystal protein cry8Ba; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVIII(b) >gnl BL_ORD_ID 752304 CryIII delta-endotoxin [Bacillus thuringiensis]	643	$1.94 \times 10^{-125}$	29 - 652 (6.14%)
135	NR gi 259156864 gb ACV96720.1  Cry1Be2 [Bacillus thuringiensis]	646	$4.33 \times 10^{-125}$	23 - 653 (6.16%)
136	NR gi 8469158 sp Q03749.1 CR7AA_BACTU RecName: Full=Pesticidal crystal protein cry7Aa; AltName: Full=129 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVIIA(a) >gnl BL_ORD_ID 1088161 crystal protein [Bacillus thuringiensis]	655	$4.33 \times 10^{-125}$	17 - 653 (5.99%)
137	NR gi 295039406 emb CBL59397.1  Cry8Da protein [Bacillus thuringiensis serovar galleriae]	621	$9.65 \times 10^{-125}$	28 - 623 (6.56%)
138	NR gi 295039398 emb CBL59393.1  Cry8Da protein [Bacillus thuringiensis serovar galleriae]	621	$9.65 \times 10^{-125}$	28 - 623 (6.56%)
139	NR gi 295039404 emb CBL59396.1  Cry8Da protein [Bacillus thuringiensis serovar galleriae]	621	$1.65 \times 10^{-124}$	28 - 623 (6.56%)
140	NR gi 295039402 emb CBL59395.1  Cry8Da protein [Bacillus thuringiensis serovar galleriae]	621	$1.65 \times 10^{-124}$	28 - 623 (6.56%)
141	NR gi 295039400 emb CBL59394.1  Cry8Da protein [Bacillus thuringiensis serovar galleriae]	621	$2.81 \times 10^{-124}$	28 - 623 (6.56%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
142	NR gi 8469157 sp O06014.1 CR9DA_BACTP RecName: Full=Pesticidal crystal protein cry9Da; AltName: Full=132 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIXD(a) >gnl BL_ORD_ID 1083297 cry9Da1 [Bacillus thuringiensis]	658	6.25 x 10 <sup>-124</sup>	25 - 652 (6.07%)
143	NR gi 1669651 emb CAA70506.1  delta-endotoxin [Bacillus thuringiensis]	613	8.17 x 10 <sup>-124</sup>	57 - 653 (7.29%)
144	NR gi 297242403 gb ADI24873.1  Cry9Ea7/Cry7Ab fusion protein [synthetic construct]	652	1.39 x 10 <sup>-123</sup>	25 - 653 (6.07%)
145	NR gi 315076091 gb ADT78693.1  insecticidal crystal protein DIG-3 [Bacillus thuringiensis]	649	4.05 x 10 <sup>-123</sup>	23 - 653 (6.20%)
146	NR gi 8469160 sp Q45733.1 CR9CA_BACTO RecName: Full=Pesticidal crystal protein cry9Ca; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIXC(a) >gnl BL_ORD_ID 1012987 unnamed protein product [Bacillus thuringiensis]	657	6.91 x 10 <sup>-123</sup>	25 - 652 (6.14%)
147	A Chain A, Crystal Structure Of Insecticidal Delta-Endotoxin Cry8ea1 From Bacillus Thuringiensis At 2.2 Angstroms Resolution >gnl	597	2.63 x 10 <sup>-122</sup>	29 - 611 (6.82%)
148	NR gi 1234884 emb CAA65457.1  delta-endotoxin [Bacillus thuringiensis]	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)
149	NR gi 61696667 gb AAX53094.1  insecticidal crystal protein Cry1C [Bacillus thuringiensis]	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)
150	NR gi 38231198 gb AAR14533.1  Cry1C [Chloroplast transformation vector pN-IC101]	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)
151	NR gi 7141141 gb AAF37224.1 AF215647_1 toxin Cry1Ca6 [Bacillus thuringiensis]	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)
152	NR gi 142750 gb AAA22343.1  cryIC(b) [Bacillus thuringiensis]	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)
153	NR gi 19880135 gb AAM00264.1 AF362020_1 insecticidal protein Cry1Ca [Bacillus thuringiensis] >gnl BL_ORD_ID 1624090 delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 1624090 Cry1Ca [Bacillus thuringiensis] >gnl BL_ORD_ID 1624090 crystal protein [Bacillus thuringiensis serovar aizawai]	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)
154	NR gi 61252387 sp P0A376.1 CR1CA_BACTA RecName: Full=Pesticidal crystal protein cry1Ca; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIC(a)	653	5.85 x 10 <sup>-122</sup>	32 - 653 (6.31%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
155	NR gi 61252386 sp P0A375.1 CR1CA_BACTE RecName: Full=Pesticidal crystal protein cry1Ca; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIC(a) >gnl BL_ORD_ID 926809 unnamed protein product [Bacillus thuringiensis]	653	3.79 x 10 <sup>-121</sup>	32 - 653 (6.28%)
156	JC7140 protoxin	651	6.47 x 10 <sup>-121</sup>	32 - 651 (6.30%)
157	NR gi 312192962 gb ADQ44146.1  Cry1C-like protein [Bacillus thuringiensis]	655	1.88 x 10 <sup>-120</sup>	32 - 653 (6.27%)
158	NR gi 78191083 gb ABB29866.1  Snun8-1 [Bacillus thuringiensis]	649	1.22 x 10 <sup>-119</sup>	22 - 652 (6.15%)
159	NR gi 8469142 sp Q45716.1 CR1JB_BACTU RecName: Full=Pesticidal crystal protein cry1Jb; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIJ(b)	613	1.59 x 10 <sup>-119</sup>	49 - 653 (6.52%)
160	NR gi 158021540 gb ABW08088.1  insecticidal crystal protein [Bacillus thuringiensis]	653	2.08 x 10 <sup>-119</sup>	29 - 652 (6.07%)
161	NR gi 1946622 gb AAD04732.1  Cry1Ea4 [Bacillus thuringiensis]	668	2.72 x 10 <sup>-119</sup>	1 - 653 (5.71%)
162	NR gi 315435775 gb ADU18260.1  crystal protein [Bacillus thuringiensis]	254	6.06 x 10 <sup>-119</sup>	23 - 268 (34.87%)
163	NR gi 40356 emb CAA31951.1  unnamed protein product [Bacillus thuringiensis]	647	6.06 x 10 <sup>-119</sup>	32 - 653 (6.31%)
164	NR gi 189176182 gb ABX79555.2  crystal Cry7-like protein [Bacillus thuringiensis serovar monterrey]	659	1.35 x 10 <sup>-118</sup>	17 - 653 (5.99%)
165	NR gi 13173244 gb AAK14339.1  insecticidal crystal protein BTRX3 [Bacillus thuringiensis serovar kunthalanags3]	619	1.76 x 10 <sup>-118</sup>	57 - 653 (7.28%)
166	NR gi 312618568 gb ADR00398.1  Cry1Ea9 [Bacillus thuringiensis]	668	2.30 x 10 <sup>-118</sup>	1 - 653 (5.69%)
167	NR gi 17979619 gb AAL50330.1 AF202531_1 Cry032 [Bacillus thuringiensis] >gnl BL_ORD_ID 2336704 cryIE(a) [Bacillus thuringiensis] >gnl BL_ORD_ID 2336704 insecticidal delta endotoxin CryIEa [Bacillus thuringiensis]	668	2.30 x 10 <sup>-118</sup>	1 - 653 (5.69%)
168	NR gi 8469151 sp Q57458.1 CR1EA_BACTX RecName: Full=Pesticidal crystal protein cry1Ea; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIE(a) >gnl BL_ORD_ID 996459 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 996459 crystal protein [Bacillus thuringiensis]	668	2.30 x 10 <sup>-118</sup>	1 - 653 (5.69%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
169	NR gi 45593719 gb AAS68357.1  insecticidal protein Cry9Ec [Bacillus thuringiensis serovar galleriae]	656	5.13 x 10 <sup>-118</sup>	25 - 652 (6.16%)
170	NR gi 237511651 gb ACQ99547.1  pesticidal crystal protein [Bacillus thuringiensis]	647	6.70 x 10 <sup>-118</sup>	24 - 653 (5.83%)
171	NR gi 160221245 gb ABX11258.1  Cry1Ea [Bacillus thuringiensis]	668	1.49 x 10 <sup>-117</sup>	1 - 653 (5.67%)
172	NR gi 1334252 emb CAA52927.1  delta-endotoxin [Bacillus thuringiensis]	656	3.32 x 10 <sup>-117</sup>	32 - 652 (5.97%)
173	NR gi 62288329 gb AAX78440.1  crystal protein Cry9Ed1 [Bacillus thuringiensis]	655	3.32 x 10 <sup>-117</sup>	25 - 652 (6.08%)
174	NR gi 295821611 gb ADF87947.1  insecticidal crystal protein Cry9Ba2 [Bacillus thuringiensis]	656	7.40 x 10 <sup>-117</sup>	32 - 652 (5.97%)
175	NR gi 62001772 gb AAX58605.1  Cry1I toxin [Bacillus thuringiensis]	549	1.07 x 10 <sup>-115</sup>	19 - 555 (7.56%)
176	NR gi 62548840 gb AAX86871.1  delta-endotoxin Cry1-A32 [Bacillus thuringiensis]	612	2.38 x 10 <sup>-115</sup>	57 - 653 (6.43%)
177	NR gi 8469134 sp P56953.1 CR1CB_BACTG RecName: Full=Pesticidal crystal protein cry1Cb; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIC(b) >gnl BL_ORD_ID 853747 insecticidal crystal protein Cry1Cb [Bacillus thuringiensis]	642	4.06 x 10 <sup>-115</sup>	26 - 653 (6.28%)
178	NR gi 256259704 gb ACU65109.1  insecticidal protein 3 [Bacillus thuringiensis]	375	3.44 x 10 <sup>-114</sup>	291 - 653 (16.71%)
179	NR gi 8469138 sp Q03746.1 CR1FA_BACTA RecName: Full=Pesticidal crystal protein cry1Fa; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIF(a) >gnl BL_ORD_ID 1030820 cryIF [Bacillus thuringiensis] >gnl BL_ORD_ID 1030820 insecticidal crystal protein [Bacillus thuringiensis]	600	3.44 x 10 <sup>-114</sup>	65 - 653 (6.75%)
180	NR gi 192383720 gb ACF04743.1  Cry9Ea protein [Bacillus thuringiensis]	664	4.49 x 10 <sup>-114</sup>	25 - 652 (5.74%)
181	NR gi 224552352 gb ACN54531.1  Cry9Ea [Bacillus thuringiensis]	664	5.87 x 10 <sup>-114</sup>	25 - 652 (5.74%)
182	NR gi 190693068 gb ACE88267.1  pesticidal crystal protein [Bacillus thuringiensis]	664	5.87 x 10 <sup>-114</sup>	25 - 652 (5.74%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
183	NR gi 8928043 sp Q9ZNL9.1 CR9EA_BACTA RecName: Full=Pesticidal crystal protein cry9Ea; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIXE(a) >gnl BL_ORD_ID 766184 crystal endotoxin Cry9Ea [Bacillus thuringiensis] >gnl BL_ORD_ID 766184 Cry9 like protein [Bacillus thuringiensis serovar aizawai] >gnl BL_ORD_ID 766184 Cry9-like protein [Bacillus thuringiensis]	664	5.87 x 10 <sup>-114</sup>	25 - 652 (5.74%)
184	NR gi 195984544 gb ACG63872.1  Cry9Ea [Bacillus thuringiensis]	664	1.71 x 10 <sup>-113</sup>	25 - 652 (5.72%)
185	NR gi 120431604 gb ABM21765.1  cry9Ea3 insecticidal crystal protein [Bacillus thuringiensis]	664	2.23 x 10 <sup>-113</sup>	25 - 652 (5.72%)
186	NR gi 2815886 gb AAB97923.1  delta-endotoxin [Bacillus thuringiensis]	611	4.20 x 10 <sup>-112</sup>	25 - 605 (6.48%)
187	NR gi 228911585 ref ZP_04075374.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597369 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200]	635	2.31 x 10 <sup>-110</sup>	32 - 653 (6.20%)
188	NR gi 117529 sp P19415.1 CR1DA_BACTA RecName: Full=Pesticidal crystal protein cry1Da; AltName: Full=132 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryID(a) >gnl BL_ORD_ID 941105 unnamed protein product [Bacillus thuringiensis]	635	2.31 x 10 <sup>-110</sup>	32 - 653 (6.17%)
189	NR gi 79014092 gb ABB51652.1  crystal protein Cry26Aa [Bacillus thuringiensis serovar finitimus]	648	3.01 x 10 <sup>-110</sup>	32 - 652 (6%)
190	NR gi 8469137 sp Q03745.1 CR1EB_BACTA RecName: Full=Pesticidal crystal protein cry1Eb; AltName: Full=134 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIE(b) >gnl BL_ORD_ID 807786 cryIE(b) [Bacillus thuringiensis]	645	6.71 x 10 <sup>-110</sup>	22 - 653 (5.89%)
191	NR gi 8928039 sp Q9X597.1 C26AA_BACTF RecName: Full=Pesticidal crystal protein cry26Aa; AltName: Full=131 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXVIA(a) >gnl BL_ORD_ID 983349 Cry26Aa1 protein [Bacillus thuringiensis serovar finitimus]	648	1.50 x 10 <sup>-109</sup>	32 - 652 (5.98%)
192	NR gi 62997562 gb AAY24695.1  Cry [Bacillus thuringiensis]	664	2.55 x 10 <sup>-109</sup>	14 - 651 (5.60%)
193	NR gi 225348557 gb ACN87262.1  Cry8Ka2 delta- endotoxin [Bacillus thuringiensis serovar kenya]	641	7.42 x 10 <sup>-109</sup>	32 - 652 (6.13%)
194	NR gi 160420050 dbj BAF93483.1  Cry8Dlike [Bacillus thuringiensis]	685	1.27 x 10 <sup>-108</sup>	4 - 652 (5.31%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
195	NR gi 186694306 gb ACC86135.1  Cry1Ac [Bacillus thuringiensis]	618	3.68 x 10 <sup>-108</sup>	57 - 653 (6.13%)
196	NR gi 87298907 gb ABD37053.1  insecticidal crystal protein [Bacillus thuringiensis serovar kurstaki]	618	4.81 x 10 <sup>-108</sup>	57 - 653 (6.13%)
197	NR gi 223469953 gb ACM90319.1  Cry1Ac [Bacillus thuringiensis]	618	8.20 x 10 <sup>-108</sup>	57 - 653 (6.15%)
198	NR gi 83743080 gb ABC42043.1  toxin pbt145-1 [Bacillus thuringiensis] >gnl BL_ORD_ID 1478657 spherical crystal protein [Bacillus thuringiensis]	648	1.07 x 10 <sup>-107</sup>	27 - 652 (5.98%)
199	NR gi 13899010 gb AAK48937.1 AF358862_2 insecticidal crystal protein [Bacillus thuringiensis]	640	2.39 x 10 <sup>-107</sup>	32 - 653 (5.93%)
200	NR gi 8469147 sp Q45747.1 CR1DB_BACTU RecName: Full=Pesticidal crystal protein cry1Db; AltName: Full=131 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryID(b) >gnl BL_ORD_ID 1008978 crystal protein [Bacillus thuringiensis]	640	2.39 x 10 <sup>-107</sup>	32 - 653 (5.93%)
201	NR gi 1769867 emb CAA67557.1  delta-endotoxin [synthetic construct]	627	2.39 x 10 <sup>-107</sup>	32 - 627 (6.21%)
202	NR gi 319433505 gb ADV57667.1  Cry1Ac [Bacillus thuringiensis]	618	3.12 x 10 <sup>-107</sup>	57 - 653 (6.10%)
203	NR gi 52783575 gb AAU87037.1  Cry1Ac [Bacillus thuringiensis]	618	3.12 x 10 <sup>-107</sup>	57 - 653 (6.10%)
204	NR gi 228956353 ref ZP_04118188.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar kurstaki str. T03a001] >gnl BL_ORD_ID 755647 RecName: Full=Pesticidal crystal protein cry1Ac; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIA(c) >gnl BL_ORD_ID 755647 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 755647 insecticidal delta-endotoxin CryIA(c) [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 755647 crystal protein [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 755647 Cry1Ac delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 755647 insecticidal crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 755647 Cry1Ac [Bacillus thuringiensis] >gnl BL_ORD_ID 755647 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis serovar kurstaki str. T03a001]	618	3.12 x 10 <sup>-107</sup>	57 - 653 (6.10%)
205	NR gi 283827873 gb ADB44078.1  CryIAc endotoxin [Bacillus thuringiensis]	618	4.07 x 10 <sup>-107</sup>	57 - 653 (6.10%)
206	NR gi 68236022 gb AAY88347.1  Cry [Bacillus thuringiensis]	618	4.07 x 10 <sup>-107</sup>	57 - 653 (6.13%)
207	NR gi 295916845 gb ADG59809.1  delta-endotoxin [synthetic construct]	627	5.32 x 10 <sup>-107</sup>	32 - 627 (6.18%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
208	NR gi 23344760 gb AAN07788.1  insecticidal crystal protein Cry1Ac [Bacillus thuringiensis]	618	5.32 x 10 <sup>-107</sup>	57 - 653 (6.13%)
209	NR gi 142740 gb AAA22338.1  delta-endotoxin [Bacillus thuringiensis]	618	5.32 x 10 <sup>-107</sup>	57 - 653 (6.13%)
210	NR gi 258558932 gb ACV81774.1  Cry1Ac [Bacillus thuringiensis]	613	6.94 x 10 <sup>-107</sup>	65 - 653 (6.20%)
211	NR gi 3979717 emb CAA10270.1  crystal toxin protein [Bacillus thuringiensis]	618	1.18 x 10 <sup>-106</sup>	57 - 653 (6.07%)
212	NR gi 309320766 gb ADO64599.1  Cry1Ac [synthetic construct]	618	1.55 x 10 <sup>-106</sup>	57 - 653 (6.05%)
213	NR gi 228911986 ref ZP_04075711.1  Pesticidal crystal protein cry8Ba [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597016 Pesticidal crystal protein cry8Ba [Bacillus thuringiensis IBL 200]	621	1.55 x 10 <sup>-106</sup>	27 - 611 (6.28%)
214	NR gi 166865176 gb ABZ01836.1  Cry1Ac22 [Bacillus thuringiensis serovar kurstaki]	618	1.55 x 10 <sup>-106</sup>	57 - 653 (6.07%)
215	NR gi 143126 gb AAA73077.1  insecticidal delta endotoxin [Bacillus thuringiensis serovar kurstaki]	618	1.55 x 10 <sup>-106</sup>	57 - 653 (6.07%)
216	NR gi 296936106 gb ADH94040.1  insecticidal crystal protein Cry1Ac [Bacillus thuringiensis]	618	2.64 x 10 <sup>-106</sup>	57 - 653 (6.10%)
217	NR gi 48727548 gb AAT46073.1  crystal protein [Bacillus thuringiensis]	648	2.64 x 10 <sup>-106</sup>	27 - 652 (5.95%)
218	NR gi 82698017 gb ABB89046.1  delta-endocytotoxin [Bacillus thuringiensis]	618	2.64 x 10 <sup>-106</sup>	57 - 653 (6.10%)
219	NR gi 67089175 gb AAY66992.1  Cry1Ac [Bacillus thuringiensis] >gnl BL_ORD_ID 115311 insecticidal crystal protein [Bacillus thuringiensis]	618	2.64 x 10 <sup>-106</sup>	57 - 653 (6.10%)
220	NR gi 33321716 gb AAQ06607.1  Cry1Ac [Bacillus thuringiensis]	618	2.64 x 10 <sup>-106</sup>	57 - 653 (6.10%)
221	NR gi 142742 gb AAA22339.1  cryIA(c)3 [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 2284822 Cry1Ac [Bacillus thuringiensis serovar kenya]	618	2.64 x 10 <sup>-106</sup>	57 - 653 (6.10%)
222	NR gi 5052774 gb AAD38701.1 AF148644_1 insecticidal protein Cry1Ac [Bacillus thuringiensis serovar kurstaki]	618	2.64 x 10 <sup>-106</sup>	57 - 653 (6.10%)
223	NR gi 251850957 gb ACT22519.1  toxin crystal protein [Bacillus thuringiensis]	618	3.45 x 10 <sup>-106</sup>	57 - 653 (6.07%)
224	NR gi 166159402 gb ABY83188.1  Cry1Ac toxin [Bacillus thuringiensis]	618	1.31 x 10 <sup>-105</sup>	57 - 653 (6.07%)
225	NR gi 289597336 gb ADD12104.1  Cry1Ac [Bacillus thuringiensis]	618	1.71 x 10 <sup>-105</sup>	57 - 653 (6.07%)
226	NR gi 118566334 gb ABL01535.1  crystal protein [Bacillus thuringiensis]	618	2.23 x 10 <sup>-105</sup>	57 - 653 (6.07%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
227	NR gi 546641 gb AAB30710.1  insecticidal protein Cry I A (c) product {toxic domain} [Bacillus thuringiensis, ssp. kurstaki HD-1, Peptide, 723 aa]	618	2.23 x 10 <sup>-105</sup>	57 - 653 (6.07%)
228	NR gi 228911556 ref ZP_04075345.1  Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597342 Pesticidal crystal protein cry1Ae [Bacillus thuringiensis IBL 200]	608	3.81 x 10 <sup>-105</sup>	56 - 653 (6.19%)
229	NR gi 8469143 sp Q45718.1 CR1HB_BACTM RecName: Full=Pesticidal crystal protein cry1Hb; AltName: Full=131 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIH(b) >gnl BL_ORD_ID 904857 crystal toxin [Bacillus thuringiensis]	608	3.81 x 10 <sup>-105</sup>	56 - 653 (6.19%)
230	NR gi 42717976 gb AAS38435.1  cry1AcAT modified toxin [synthetic construct]	618	8.49 x 10 <sup>-105</sup>	57 - 653 (6.02%)
231	NR gi 33339672 gb AAQ14326.1 AF281866_1 delta-endotoxin Cry1A [Bacillus thuringiensis]	618	4.21 x 10 <sup>-104</sup>	57 - 653 (6.07%)
232	NR gi 82468528 gb ABB76664.1  Cry1A-type pesticidal crystal protein [Bacillus thuringiensis serovar alesti]	618	4.21 x 10 <sup>-104</sup>	57 - 653 (6.07%)
233	NR gi 228988837 ref ZP_04148895.1  hypothetical protein bthur0001_54740 [Bacillus thuringiensis serovar tochiensis BGSC 4Y1] >gnl BL_ORD_ID 2562308 hypothetical protein bthur0001_54740 [Bacillus thuringiensis serovar tochiensis BGSC 4Y1]	659	2.09 x 10 <sup>-103</sup>	27 - 652 (5.90%)
234	NR gi 307697880 gb ADN86314.1  insecticidal crystal protein [Bacillus thuringiensis]	652	3.57 x 10 <sup>-103</sup>	28 - 652 (5.86%)
235	NR gi 81302556 gb ABB70817.1  insecticidal crystal protein Cry7Ba1 [Bacillus thuringiensis serovar huazhongensis]	612	3.57 x 10 <sup>-103</sup>	62 - 653 (6.33%)
236	NR gi 110734449 gb ABG88858.1  Cry1Ab-like BT toxin OL2 [Bacillus thuringiensis]	389	4.66 x 10 <sup>-103</sup>	237 - 611 (14.01%)
237	NR gi 78191079 gb ABB29864.1  Snun8-2 [Bacillus thuringiensis]	652	6.08 x 10 <sup>-103</sup>	28 - 652 (5.86%)
238	NR gi 49035989 gb AAT48690.1  Cry8X [Bacillus thuringiensis]	652	6.08 x 10 <sup>-103</sup>	28 - 652 (5.86%)
239	NR gi 37993013 gb AAR06667.1  hybrid Cry1Ab-Cry1Ca protein [synthetic construct]	604	6.08 x 10 <sup>-103</sup>	57 - 632 (5.98%)
240	NR gi 8469148 sp Q45748.1 CR1HA_BACTU RecName: Full=Pesticidal crystal protein cry1Ha; AltName: Full=133 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIH(a) >gnl BL_ORD_ID 1069697 crystal protein [Bacillus thuringiensis]	609	7.95 x 10 <sup>-103</sup>	56 - 653 (6.04%)
241	NR gi 114439356 gb ABI74753.1  Cry1Ab-like toxin [uncultured Bacillus sp.]	389	1.04 x 10 <sup>-102</sup>	237 - 611 (14.01%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
242	NR gi 46409857 gb AAS93796.1  cry1A type crystal protein [Bacillus thuringiensis serovar kurstaki]	617	3.02 x 10 <sup>-102</sup>	57 - 653 (6.04%)
243	NR gi 37728786 gb AAO39719.1  insecticidal crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 1734617 Cry1Ab [Bacillus thuringiensis]	617	3.02 x 10 <sup>-102</sup>	57 - 653 (6.04%)
244	NR gi 54112021 gb AAV28716.1  Cry9Bb delta-endotoxin [Bacillus thuringiensis serovar japonensis]	685	5.15 x 10 <sup>-102</sup>	11 - 652 (5.05%)
245	NR gi 228989192 ref ZP_04149208.1  hypothetical protein bthur0001_58040 [Bacillus thuringiensis serovar tochiensis BGSC 4Y1] >gnl BL_ORD_ID 2562010 hypothetical protein bthur0001_58040 [Bacillus thuringiensis serovar tochiensis BGSC 4Y1]	655	4.82 x 10 <sup>-100</sup>	25 - 653 (5.45%)
246	NR gi 283971011 gb ADB54826.1  CryIII insecticidal crystal protein [Bacillus thuringiensis]	661	6.30 x 10 <sup>-100</sup>	27 - 652 (5.52%)
247	NR gi 41056817 gb AAR98783.1  HBF-1 CryIII delta-endotoxin [Bacillus thuringiensis]	661	6.30 x 10 <sup>-100</sup>	27 - 652 (5.52%)
248	NR gi 8469159 sp Q45706.1 CR8CA_BACTP RecName: Full=Pesticidal crystal protein cry8Ca; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVIIIc(a) >gnl BL_ORD_ID 1071392 CryIII delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 1071392 delta-endotoxin	661	6.30 x 10 <sup>-100</sup>	27 - 652 (5.52%)
249	NR gi 150249714 gb ABR67863.1  pesticidal crystal protein [Bacillus thuringiensis]	655	1.55 x 10 <sup>-98</sup>	26 - 653 (5.69%)
250	NR gi 908825 emb CAA34382.1  delta-endotoxin (AA 429-726) [Bacillus thuringiensis]	198	3.45 x 10 <sup>-98</sup>	456 - 653 (46.42%)
251	NR gi 46409863 gb AAS93799.1  cry1 type crystal protein [Bacillus thuringiensis serovar kenya]	651	1.01 x 10 <sup>-97</sup>	30 - 653 (5.64%)
252	NR gi 45387401 gb AAS60191.1  crystal protein [Bacillus thuringiensis serovar kurstaki]	652	8.51 x 10 <sup>-97</sup>	22 - 653 (5.58%)
253	NR gi 153866164 gb ABS53003.1  crystal protein [Bacillus thuringiensis]	653	1.45 x 10 <sup>-96</sup>	28 - 653 (5.68%)
254	NR gi 309320768 gb ADO64600.1  Cry1Ab/c [synthetic construct]	594	5.16 x 10 <sup>-94</sup>	57 - 629 (5.98%)
255	NR gi 171854384 emb CAQ30431.1  pesticidal crystal protein cry1Ac [Bacillus thuringiensis serovar kurstaki]	635	2.56 x 10 <sup>-93</sup>	57 - 653 (5.70%)
256	NR gi 78191081 gb ABB29865.1  Hbf-18-1 [Bacillus thuringiensis]	590	1.66 x 10 <sup>-92</sup>	27 - 594 (6.41%)
257	NR gi 169930482 gb ACB05715.1  truncated Cry1Ac [Bacillus thuringiensis]	589	2.40 x 10 <sup>-91</sup>	57 - 624 (5.97%)
258	NR gi 22415751 gb AAM95162.1  insecticidal protein CryIaC1 [synthetic construct]	587	5.34 x 10 <sup>-91</sup>	57 - 622 (5.98%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
259	NR gi 163943265 ref YP_001642495.1  Delta endotoxin central region subgroup 1 [Bacillus weihenstephanensis KBAB4] >gnl BL_ORD_ID 700643 Delta endotoxin central region subgroup 1 [Bacillus weihenstephanensis KBAB4]	610	5.34 x 10 <sup>-91</sup>	37 - 611 (5.72%)
260	NR gi 40275 emb CAA38098.1  unnamed protein product [Bacillus thuringiensis]	588	1.19 x 10 <sup>-90</sup>	57 - 623 (5.99%)
261	NR gi 46359602 dbj BAD15303.1  parasporal crystal protein [Paenibacillus lentimorbus]	647	1.55 x 10 <sup>-90</sup>	29 - 652 (5.54%)
262	NR gi 2414156 emb CAA70925.1  delta-endotoxin [Bacillus thuringiensis]	587	2.65 x 10 <sup>-90</sup>	57 - 622 (5.92%)
263	NR gi 62433238 dbj BAD95474.1  Cryhime1 [Paenibacillus popilliae]	662	1.32 x 10 <sup>-89</sup>	15 - 652 (5.09%)
264	NR gi 194022371 gb ACF32736.1  Cry1ab/ac [synthetic construct] >gnl BL_ORD_ID 673148 hybrid Cry1Ab/Ac [Insertion vector pFHBT1] >gnl BL_ORD_ID 673148 hybrid Cry1Ab/Ac [Insertion vector pFHBT1]	584	6.53 x 10 <sup>-89</sup>	57 - 619 (5.92%)
265	NR gi 5916230 gb AAD55947.1  Cry 1Ac insecticidal toxin [synthetic construct]	582	6.53 x 10 <sup>-89</sup>	57 - 617 (5.96%)
266	NR gi 2555147 gb AAC63055.1  CryIA(c) [synthetic construct]	582	1.45 x 10 <sup>-88</sup>	57 - 617 (5.96%)
267	NR gi 4090435 gb AAC98807.1  truncated Cry1Ac [synthetic construct]	582	1.45 x 10 <sup>-88</sup>	57 - 617 (5.96%)
268	NR gi 217330349 dbj BAH03128.1  insecticidal crystal protein [synthetic construct]	584	1.9 x 10 <sup>-88</sup>	57 - 619 (5.95%)
269	NR gi 253735900 gb ACT34171.1  Cry1-like delta-endotoxin [Bacillus thuringiensis]	623	9.43 x 10 <sup>-88</sup>	62 - 653 (5.90%)
270	NR gi 46359600 dbj BAD15301.1  parasporal crystal protein [Paenibacillus lentimorbus]	633	1.61 x 10 <sup>-87</sup>	35 - 652 (5.34%)
271	NR gi 314906994 gb ADT61968.1  cry1Ac protein [synthetic construct]	576	2.10 x 10 <sup>-87</sup>	57 - 611 (6.06%)
272	NR gi 22770982 gb AAN06817.1  insect toxin CryIA(c) [synthetic construct]	584	2.10 x 10 <sup>-87</sup>	57 - 619 (5.84%)
273	NR gi 315583684 gb ADU34072.1  Cry1 [Bacillus thuringiensis]	166	4.68 x 10 <sup>-87</sup>	488 - 653 (59.88%)
274	NR gi 169788589 emb CAQ03747.1  pesticidal crystal protein cry1Ac [Bacillus thuringiensis serovar kurstaki]	659	1.36 x 10 <sup>-86</sup>	57 - 653 (5.37%)
275	NR gi 1171235 gb AAA86266.1  CryIA(c) [Bacillus thuringiensis serovar kurstaki]	576	1.36 x 10 <sup>-86</sup>	57 - 611 (6.03%)
276	NR gi 157418804 gb ABV55105.1  Cry toxin [Bacillus thuringiensis]	623	5.72 x 10 <sup>-85</sup>	36 - 635 (5.57%)
277	NR gi 196051457 gb ACG68882.1  insecticidal crystal protein Cry1Ac [Bacillus thuringiensis]	472	2.75 x 10 <sup>-79</sup>	201 - 653 (8.35%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
278	NR gi 196051459 gb ACG68883.1  insecticidal crystal protein Cry1Ac [Bacillus thuringiensis]	472	2.33 x 10 <sup>-78</sup>	201 - 653 (8.30%)
279	NR gi 228988940 ref ZP_04148987.1  hypothetical protein bthur0001_55730 [Bacillus thuringiensis serovar tochiensis BGSC 4Y1] >gnl BL_ORD_ID 2562217 hypothetical protein bthur0001_55730 [Bacillus thuringiensis serovar tochiensis BGSC 4Y1]	665	2.57 x 10 <sup>-77</sup>	32 - 653 (4.93%)
280	NR gi 110734451 gb ABG88859.1  Cry1I-like Bt toxin OL3 [Bacillus thuringiensis]	386	3.36 x 10 <sup>-77</sup>	237 - 611 (11.34%)
281	NR gi 19386614 dbj BAB72016.2  mosquitocidal toxin [Bacillus thuringiensis serovar aizawai]	650	1.41 x 10 <sup>-75</sup>	24 - 635 (5.11%)
282	NR gi 48880 emb CAA41425.1  crystal protein [Bacillus thuringiensis]	604	9.15 x 10 <sup>-75</sup>	81 - 652 (5.56%)
283	NR gi 8469164 sp Q99031.1 CR9AA_BACTG RecName: Full=Pesticidal crystal protein cry9Aa; AltName: Full=130 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIXA(a); Flags: Precursor >gnl BL_ORD_ID 1092622 delta-endotoxin CryIG protoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 1092622 delta endotoxin	604	9.15 x 10 <sup>-75</sup>	81 - 652 (5.56%)
284	NR gi 228918254 ref ZP_04081750.1  Pesticidal crystal protein cry8Ba [Bacillus thuringiensis serovar pulsiensis BGSC 4CC1] >gnl BL_ORD_ID 2594240 Pesticidal crystal protein cry8Ba [Bacillus thuringiensis serovar pulsiensis BGSC 4CC1]	644	1.20 x 10 <sup>-74</sup>	29 - 652 (5.14%)
285	NR gi 46852037 gb AAT02712.1  Cry1Ab [Bacillus thuringiensis]	143	1.32 x 10 <sup>-73</sup>	511 - 653 (69.44%)
286	NR gi 315273133 gb ADU03202.1  D-fructose-6-phosphate amidotransferase [Bacillus thuringiensis CT43]	432	1.12 x 10 <sup>-72</sup>	23 - 439 (8.79%)
287	NR gi 40457464 gb AAR86772.1  CRY9C [synthetic construct]	337	1.46 x 10 <sup>-72</sup>	25 - 349 (13.03%)
288	NR gi 234203282 gb ACQ91257.1  pesticidal crystal protein [Bacillus thuringiensis]	663	6.79 x 10 <sup>-70</sup>	13 - 652 (4.57%)
289	NR gi 165970281 gb ABY76164.1  truncated insecticidal active protein delta-endotoxin Cry1Ab [Bacillus thuringiensis]	135	6.79 x 10 <sup>-70</sup>	519 - 653 (74.07%)
290	NR gi 8928007 sp O32307.1 C19AA_BACTJ RecName: Full=Pesticidal crystal protein cry19Aa; AltName: Full=75 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIXA(a) >gnl BL_ORD_ID 948909 mosquitocidal toxin [Bacillus thuringiensis]	529	4.12 x 10 <sup>-67</sup>	34 - 534 (6.40%)
291	NR gi 142759 gb AAA22349.1  ORF [Bacillus thuringiensis]	327	9.18 x 10 <sup>-67</sup>	19 - 334 (12.25%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
292	NR gi 17385650 dbj BAB78603.1  crystal protein CryE6S [Bacillus thuringiensis]	682	2.95 x 10 <sup>-65</sup>	25 - 652 (4.62%)
293	NR gi 9828610 gb AAG00235.1 AF285775_1 parasporal inclusion protein Cry [Bacillus thuringiensis serovar finitimus]	670	5.03 x 10 <sup>-65</sup>	23 - 653 (4.48%)
294	NR gi 79014094 gb ABB51653.1  crystal protein Cry28Aa [Bacillus thuringiensis serovar finitimus]	670	3.26 x 10 <sup>-64</sup>	23 - 653 (4.43%)
295	NR gi 41688283 dbj BAD08532.1  putative mosquitocidal toxin [Bacillus thuringiensis serovar entomocidus]	651	3.26 x 10 <sup>-64</sup>	28 - 611 (4.81%)
296	NR gi 8928040 sp Q9X682.1 C28AA_BACTF RecName: Full=Pesticidal crystal protein cry28Aa; AltName: Full=126 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXVIII(a) >gnl BL_ORD_ID 983304 Cry28Aa1 delta-endotoxin [Bacillus thuringiensis serovar finitimus]	667	3.61 x 10 <sup>-63</sup>	23 - 653 (4.32%)
297	NR gi 8928011 sp O86170.1 C19BA_BACUH RecName: Full=Pesticidal crystal protein cry19Ba; AltName: Full=78 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIXB(a) >gnl BL_ORD_ID 903412 insecticidal protein [Bacillus thuringiensis]	636	1.79 x 10 <sup>-62</sup>	25 - 633 (4.89%)
298	NR gi 46359604 dbj BAD15305.1  parasporal crystal protein [Paenibacillus lentimorbus]	329	6.80 x 10 <sup>-62</sup>	25 - 350 (11.83%)
299	NR gi 57639076 gb AAW55474.1  delta-endotoxin [Bacillus thuringiensis serovar israelensis]	677	5.76 x 10 <sup>-61</sup>	15 - 652 (4.06%)
300	NR gi 149211795 gb ABR22236.1  truncated pesticidal crystal protein [Bacillus thuringiensis]	677	7.52 x 10 <sup>-61</sup>	15 - 652 (4.08%)
301	NR gi 40310 emb CAA30114.1  unnamed protein product [Bacillus thuringiensis]	677	1.68 x 10 <sup>-60</sup>	15 - 652 (4.06%)
302	NR gi 161598576 ref YP_001573790.1  pesticidal crystal protein cry4BA [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 998423 RecName: Full=Pesticidal crystal protein cry4Ba; AltName: Full=128 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIVB(a) >gnl BL_ORD_ID 998423 unnamed protein product [Bacillus thuringiensis] >gnl BL_ORD_ID 998423 pesticidal crystal protein cry4BA [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 998423 130 kDa crystal protein [Bacillus thuringiensis]	677	1.68 x 10 <sup>-60</sup>	15 - 652 (4.06%)
303	NR gi 316931338 gb ADU60188.1  crystal protein [Bacillus thuringiensis]	242	3.73 x 10 <sup>-60</sup>	19 - 259 (18.95%)
304	NR gi 149211793 gb ABR22235.1  pesticidal crystal protein [Bacillus thuringiensis]	676	8.32 x 10 <sup>-60</sup>	15 - 652 (4.07%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
305	NR gi 15721993 gb AAG36711.1  crystal protein [Bacillus thuringiensis serovar yunnanensis]	668	9.20 x 10 <sup>-59</sup>	37 - 652 (4.30%)
306	NR gi 149211799 gb ABR22238.1  pesticidal crystal protein [Bacillus thuringiensis]	682	2.05 x 10 <sup>-58</sup>	15 - 652 (3.98%)
307	NR gi 149211803 gb ABR22240.1  pesticidal crystal protein [Bacillus thuringiensis]	670	3.49 x 10 <sup>-58</sup>	22 - 652 (4.08%)
308	NR gi 149211797 gb ABR22237.1  pesticidal crystal protein [Bacillus thuringiensis]	677	4.56 x 10 <sup>-58</sup>	15 - 652 (4.04%)
309	NR gi 216288 dbj BAA00178.1  130 kDa insecticidal protein (ISRH3) [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 894363 insecticidal protein ISRH3	677	5.96 x 10 <sup>-58</sup>	15 - 652 (4.04%)
310	NR gi 319433507 gb ADV57668.1  Cry50-like protein [Bacillus thuringiensis]	642	1.33 x 10 <sup>-57</sup>	36 - 635 (4.66%)
311	NR gi 319433509 gb ADV57669.1  Cry50-like protein [Bacillus thuringiensis]	642	2.27 x 10 <sup>-57</sup>	36 - 635 (4.66%)
312	NR gi 315435807 gb ADU18276.1  crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839281 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839281 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839281 crystal protein [Bacillus thuringiensis]	113	2.96 x 10 <sup>-57</sup>	496 - 608 (88.50%)
313	NR gi 316931336 gb ADU60187.1  crystal protein [Bacillus thuringiensis]	240	5.05 x 10 <sup>-57</sup>	19 - 257 (18.93%)
314	NR gi 134274695 emb CAJ43600.1  pesticidal crystal protein cry24-like [Bacillus thuringiensis]	654	5.05 x 10 <sup>-57</sup>	31 - 635 (4.49%)
315	NR gi 193089942 gb ACF15199.1  toxin protein [Bacillus thuringiensis]	636	5.58 x 10 <sup>-56</sup>	32 - 633 (4.82%)
316	NR gi 316931340 gb ADU60189.1  crystal protein [Bacillus thuringiensis]	231	2.12 x 10 <sup>-55</sup>	19 - 248 (19.49%)
317	NR gi 315435789 gb ADU18267.1  crystal protein [Bacillus thuringiensis]	331	2.12 x 10 <sup>-55</sup>	324 - 653 (12.78%)
318	NR gi 315435779 gb ADU18262.1  crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839276 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839276 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839276 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839276 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839276 crystal protein [Bacillus thuringiensis]	331	2.12 x 10 <sup>-55</sup>	324 - 653 (12.78%)
319	NR gi 218455315 gb ACK77319.1  hybrid cry1Ac/cry1Ab toxin [synthetic construct]	349	6.17 x 10 <sup>-55</sup>	32 - 373 (9.93%)
320	NR gi 315435781 gb ADU18263.1  crystal protein [Bacillus thuringiensis]	331	8.06 x 10 <sup>-55</sup>	324 - 653 (12.69%)

Page 37 of 59

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
325	NR gi 316931342 gb ADU60190.1  crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 952277 crystal protein [Bacillus thuringiensis]	248	1.16 x 10 <sup>-53</sup>	352 - 598 (19.67%)
326	NR gi 156875956 gb ABU96490.1  Cry19-like protein [Bacillus thuringiensis]	641	1.16 x 10 <sup>-53</sup>	26 - 617 (4.75%)
327	NR gi 17385648 dbj BAB78602.1  crystal protein CryE6Q [Bacillus thuringiensis]	694	1.98 x 10 <sup>-53</sup>	27 - 652 (3.90%)
328	NR gi 142738 gb AAA22337.1  mosquitocidal protein [Bacillus thuringiensis]	681	5.77 x 10 <sup>-53</sup>	15 - 652 (3.95%)
329	NR gi 149211801 gb ABR22239.1  pesticidal crystal protein [Bacillus thuringiensis]	684	9.85 x 10 <sup>-53</sup>	15 - 652 (3.89%)
330	NR gi 89885725 dbj BAE86999.1  pesticidal crystal protein [Bacillus thuringiensis serovar sotto]	654	9.85 x 10 <sup>-53</sup>	37 - 635 (4.42%)
331	NR gi 258558934 gb ACV81775.1  Cry1Ac [Bacillus thuringiensis]	376	1.29 x 10 <sup>-52</sup>	296 - 653 (10.11%)
332	A Chain A, Mosquito-Larvicidal Toxin Cry4ba From Bacillus Thuringiensis Ssp. Israelensis	574	1.86 x 10 <sup>-51</sup>	69 - 611 (4.80%)
333	NR gi 228904964 ref ZP_04069015.1  Pesticidal crystal protein cry10Aa [Bacillus thuringiensis IBL 4222] >gnl BL_ORD_ID 2601834 Pesticidal crystal protein cry10Aa [Bacillus thuringiensis IBL 4222]	647	5.40 x 10 <sup>-51</sup>	25 - 635 (4.32%)
334	NR gi 161598578 ref YP_001573792.1  pesticidal crystal protein cry10AA [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 2654292 pesticidal crystal protein cry10AA [Bacillus thuringiensis serovar israelensis]	647	5.40 x 10 <sup>-51</sup>	25 - 635 (4.32%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
335	NR gi 161598618 ref YP_001573833.1  pesticidal crystal protein cry4AA [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 1098523 RecName: Full=Pesticidal crystal protein cry4Aa; AltName: Full=135 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIVA(a) >gnl BL_ORD_ID 1098523 130 kDa insecticidal protein (ISRH4) [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 1098523 pesticidal crystal protein cry4AA [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 1098523 d-endotoxin [synthetic construct] >gnl BL_ORD_ID 1098523 insecticidal protein ISRH4	670	9.22 x 10 <sup>-51</sup>	38 - 652 (4.08%)
336	NR gi 8928012 sp O87905.1 C24AA_BACTJ RecName: Full=Pesticidal crystal protein cry24Aa; AltName: Full=Crystalline entomocidal protoxin; Short=Crystal protein; AltName: Full=Insecticidal delta-endotoxin CryXXIVA(a); AltName: Full=Insecticidal protein Jeg72 >gnl BL_ORD_ID 802630 insecticidal protein Jeg72 [Bacillus thuringiensis serovar jegathesan]	587	9.22 x 10 <sup>-51</sup>	76 - 633 (4.82%)
337	NR gi 117329 sp P09662.1 C10AA_BACTI RecName: Full=Pesticidal crystal protein cry10Aa; AltName: Full=78 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXA(a) >gnl BL_ORD_ID 937933 insecticidal endotoxin (put.); putative [Bacillus thuringiensis]	647	1.57 x 10 <sup>-50</sup>	25 - 635 (4.30%)
338	NR gi 40352 emb CAA68485.1  unnamed protein product [Bacillus thuringiensis]	670	2.05 x 10 <sup>-50</sup>	38 - 652 (4.05%)
339	NR gi 148787929 gb ABR12214.1  Cry4A [Bacillus thuringiensis]	670	2.68 x 10 <sup>-50</sup>	38 - 652 (4.01%)
340	NR gi 124263655 gb ABM97547.1  Cry4A [Bacillus thuringiensis]	670	5.98 x 10 <sup>-50</sup>	38 - 652 (4.01%)
341	NR gi 159141832 gb ABW89732.1  Cry4c [Bacillus thuringiensis]	645	7.80 x 10 <sup>-50</sup>	25 - 635 (4.30%)
342	NR gi 148787937 gb ABR12218.1  Cry4A [Bacillus thuringiensis]	667	1.33 x 10 <sup>-49</sup>	38 - 652 (4.05%)
343	NR gi 148787933 gb ABR12216.1  Cry4A [Bacillus thuringiensis]	670	2.27 x 10 <sup>-49</sup>	38 - 652 (4.01%)
344	NR gi 159141840 gb ABW89736.1  Cry4c [Bacillus thuringiensis]	643	3.87 x 10 <sup>-49</sup>	25 - 635 (4.28%)
345	NR gi 159141836 gb ABW89734.1  Cry4c [Bacillus thuringiensis]	640	6.61 x 10 <sup>-49</sup>	25 - 635 (4.47%)
346	NR gi 51090240 dbj BAD35166.1  Cry protein [Bacillus thuringiensis]	634	6.61 x 10 <sup>-49</sup>	25 - 611 (4.48%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
347	NR gi 31745044 dbj BAC77648.1  putative mosquitocidal toxin [Bacillus thuringiensis serovar aizawai]	596	1.92 x 10 <sup>-48</sup>	81 - 635 (4.90%)
348	NR gi 37999234 dbj BAD00052.1  putative mosquitocidal toxin [Bacillus thuringiensis serovar entomocidus]	636	3.28 x 10 <sup>-48</sup>	30 - 633 (4.23%)
349	NR gi 239638225 gb ACR43758.2  cry4 delta-toxin-like protein [Bacillus thuringiensis]	596	5.59 x 10 <sup>-48</sup>	68 - 633 (4.67%)
350	NR gi 148787931 gb ABR12215.1  Cry4A [Bacillus thuringiensis] >gnl BL_ORD_ID 2562042 Cry4A [Bacillus thuringiensis]	680	5.59 x 10 <sup>-48</sup>	38 - 652 (3.89%)
351	NR gi 17977979 emb CAC80985.1  Cry29Aa protein [Bacillus thuringiensis serovar medellin]	596	1.25 x 10 <sup>-47</sup>	65 - 633 (4.79%)
352	NR gi 159141830 gb ABW89731.1  Cry4c [Bacillus thuringiensis]	650	2.78 x 10 <sup>-47</sup>	25 - 635 (4.24%)
353	NR gi 16945772 dbj BAB72018.1  putative mosquitocidal toxin [Bacillus thuringiensis serovar aizawai]	600	3.63 x 10 <sup>-47</sup>	81 - 633 (4.97%)
354	NR gi 51090236 dbj BAD35163.1  cancer cell-killing Cry protein [Bacillus thuringiensis]	327	8.08 x 10 <sup>-47</sup>	25 - 312 (11.41%)
354	NR gi 51090236 dbj BAD35163.1  cancer cell-killing Cry protein [Bacillus thuringiensis]	327	8.08 x 10 <sup>-47</sup>	25 - 312 (11.41%)
355	NR gi 242693276 gb ACS93601.1  Cry20-like delta endotoxin [Bacillus thuringiensis]	556	1.38 x 10 <sup>-46</sup>	80 - 611 (5.31%)
356	NR gi 159141834 gb ABW89733.1  Cry4c [Bacillus thuringiensis]	645	1.38 x 10 <sup>-46</sup>	25 - 635 (4.23%)
357	NR gi 159141838 gb ABW89735.1  Cry4c [Bacillus thuringiensis]	649	1.80 x 10 <sup>-46</sup>	25 - 635 (4.25%)
358	NR gi 51090228 dbj BAD35157.1  cancer cell-killing Cry protein parasporin-3 [Bacillus thuringiensis] >gnl BL_ORD_ID 1315896 cancer cell-killing Cry protein parasporin-3 [Bacillus thuringiensis]	327	1.80 x 10 <sup>-46</sup>	25 - 312 (11.31%)
358	NR gi 51090228 dbj BAD35157.1  cancer cell-killing Cry protein parasporin-3 [Bacillus thuringiensis] >gnl BL_ORD_ID 1315896 cancer cell-killing Cry protein parasporin-3 [Bacillus thuringiensis]	327	1.80 x 10 <sup>-46</sup>	25 - 312 (11.31%)
359	NR gi 8928008 sp O32321.1 C20AA_BACUF RecName: Full=Pesticidal crystal protein cry20Aa; AltName: Full=86 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXA(a) >gnl BL_ORD_ID 771094 mosquitocidal toxin [Bacillus thuringiensis]	550	2.35 x 10 <sup>-46</sup>	79 - 612 (5.26%)
360	NR gi 319433511 gb ADV57670.1  Cry54-like protein [Bacillus thuringiensis]	679	4.01 x 10 <sup>-46</sup>	24 - 635 (3.86%)
361	A Chain A, Structure Of The Functional Form Of The Mosquito-Larvicidal Cry4aa Toxin From Bacillus Thuringiensis At 2.8 A Resolution	626	5.23 x 10 <sup>-46</sup>	38 - 611 (4.39%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
362	NR gi 87887911 dbj BAE79727.1  cry4A [Bacillus thuringiensis]	626	5.23 x 10 <sup>-46</sup>	38 - 611 (4.39%)
363	NR gi 228988828 ref ZP_04148889.1  Pesticidal crystal protein cry7Aa [Bacillus thuringiensis serovar tochiensis BGSC 4Y1] >gnl BL_ORD_ID 2562310 Pesticidal crystal protein cry7Aa [Bacillus thuringiensis serovar tochiensis BGSC 4Y1]	367	1.99 x 10 <sup>-45</sup>	148 - 495 (9.50%)
364	NR gi 169261091 gb ACA52194.1  insecticidal crystal protein Cry54Aa [Bacillus thuringiensis]	656	2.60 x 10 <sup>-45</sup>	25 - 611 (4.28%)
365	NR gi 256033941 gb ACU57499.1  pesticidal crystal protein [Bacillus thuringiensis]	628	4.43 x 10 <sup>-45</sup>	37 - 636 (4.16%)
366	NR gi 156711546 emb CAJ86545.1  Cry48Aa protein [Lysinibacillus sphaericus] >gnl BL_ORD_ID 2138393 Cry48Aa protein [Lysinibacillus sphaericus] >gnl BL_ORD_ID 2138393 Crystal toxin [Lysinibacillus sphaericus]	704	4.15 x 10 <sup>-43</sup>	20 - 653 (3.83%)
367	NR gi 17385646 dbj BAB78601.1  crystal protein CryE6L [Bacillus thuringiensis]	724	9.24 x 10 <sup>-43</sup>	10 - 652 (3.62%)
368	NR gi 228924379 ref ZP_04087617.1  Pesticidal crystal protein cry19Aa [Bacillus thuringiensis serovar huazhongensis BGSC 4BD1] >gnl BL_ORD_ID 2590097 Pesticidal crystal protein cry19Aa [Bacillus thuringiensis serovar huazhongensis BGSC 4BD1]	226	7.82 x 10 <sup>-42</sup>	62 - 275 (18.21%)
369	NR gi 156711552 emb CAJ86549.1  Cry48Aa protein [Lysinibacillus sphaericus]	684	1.74 x 10 <sup>-41</sup>	20 - 653 (3.95%)
370	NR gi 156711550 emb CAJ86548.1  Cry48Aa protein [Lysinibacillus sphaericus]	684	6.62 x 10 <sup>-41</sup>	20 - 653 (3.93%)
371	NR gi 228988817 ref ZP_04148882.1  Pesticidal crystal protein cry4Aa [Bacillus thuringiensis serovar tochiensis BGSC 4Y1] >gnl BL_ORD_ID 2562322 Pesticidal crystal protein cry4Aa [Bacillus thuringiensis serovar tochiensis BGSC 4Y1]	672	2.78 x 10 <sup>-39</sup>	30 - 652 (3.63%)
372	NR gi 10719937 sp Q45882.1 C16AA_CLOBI RecName: Full=Pesticidal crystal-like protein cry16Aa; AltName: Full=Cbm71 mosquitocidal toxin; AltName: Full=Insecticidal toxin CryXVIA(a) >gnl BL_ORD_ID 924735 cbm71 mosquitocidal toxin [Clostridium bifermentans]	559	3.63 x 10 <sup>-39</sup>	62 - 588 (5.03%)
373	NR gi 8928030 sp Q9S597.1 C27AA_BACUH RecName: Full=Pesticidal crystal protein cry27Aa; AltName: Full=94 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXVIIA(a) >gnl BL_ORD_ID 987814 94kDa mosquitocidal toxin [Bacillus thuringiensis serovar higo]	662	6.20 x 10 <sup>-39</sup>	36 - 638 (3.88%)
374	NR gi 54695305 dbj BAD67157.1  Cry30-like [Bacillus thuringiensis]	634	8.09 x 10 <sup>-39</sup>	36 - 613 (4.11%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
375	NR gi 194368067 gb ACF57953.1  Cry-like protein [Bacillus thuringiensis]	530	6.85 x 10 <sup>-38</sup>	24 - 505 (5.09%)
376	NR gi 194368065 gb ACF57952.1  Cry-like protein [Bacillus thuringiensis]	530	1.17 x 10 <sup>-37</sup>	24 - 505 (5.05%)
377	NR gi 206939340 gb ACI22625.1  Cry30-like protein [Bacillus thuringiensis]	641	1.99 x 10 <sup>-37</sup>	27 - 613 (3.94%)
378	NR gi 194368073 gb ACF57956.1  Cry-like protein [Bacillus thuringiensis]	530	4.44 x 10 <sup>-37</sup>	24 - 505 (5.02%)
379	NR gi 255653178 gb ACU24781.1  Cry30Ca [Bacillus thuringiensis serovar jegathesan]	634	4.44 x 10 <sup>-37</sup>	36 - 613 (4.08%)
380	NR gi 89000901 dbj BAE80088.1  delta-endotoxin [Bacillus thuringiensis serovar aizawai]	629	1.21 x 10 <sup>-34</sup>	32 - 618 (4.07%)
381	NR gi 186920384 gb ACC95445.1  Cry 30Ea1 [Bacillus thuringiensis]	631	6.00 x 10 <sup>-34</sup>	27 - 613 (3.99%)
382	NR gi 10719926 sp O05102.1 C17AA_CLOBI RecName: Full=Pesticidal crystal-like protein cry17Aa; AltName: Full=Cbm72 mosquitocidal toxin; AltName: Full=Insecticidal toxin CryXVIIA(a) >gnl BL_ORD_ID 804393 cbm72 mosquitocidal toxin [Clostridium bifermentans]	629	1.02 x 10 <sup>-33</sup>	36 - 611 (4.04%)
383	NR gi 125661890 gb ABN49951.1  Cry30-like protein [Bacillus thuringiensis]	637	5.08 x 10 <sup>-33</sup>	32 - 618 (4.19%)
384	NR gi 46852039 gb AAT02713.1  Cry1Ba [Bacillus thuringiensis]	143	1.48 x 10 <sup>-32</sup>	511 - 653 (35.70%)
385	NR gi 195964100 gb ACG60020.1  Cry30-like protein [Bacillus thuringiensis]	628	1.93 x 10 <sup>-32</sup>	32 - 618 (4.08%)
386	NR gi 315435755 gb ADU18250.1  crystal protein [Bacillus thuringiensis]	107	2.52 x 10 <sup>-32</sup>	500 - 606 (62.02%)
387	NR gi 17977981 emb CAC80986.1  Cry30Aa protein [Bacillus thuringiensis serovar medellin]	653	3.29 x 10 <sup>-32</sup>	27 - 613 (3.85%)
388	NR gi 182639269 gb ACB98633.1  Cry1Ac [Bacillus thuringiensis]	167	9.58 x 10 <sup>-32</sup>	492 - 653 (29.40%)
389	NR gi 315435757 gb ADU18251.1  crystal protein [Bacillus thuringiensis]	106	2.14 x 10 <sup>-31</sup>	503 - 608 (62.30%)
390	NR gi 46852035 gb AAT02711.1  Cry1E [Bacillus thuringiensis serovar kenya]	143	4.76 x 10 <sup>-31</sup>	511 - 653 (34.23%)
391	NR gi 170676234 gb ACB30356.1  Cry1Ac [Bacillus thuringiensis]	167	5.26 x 10 <sup>-30</sup>	492 - 653 (29.04%)
392	NR gi 182639271 gb ACB98634.1  Cry1Ac [Bacillus thuringiensis]	167	6.87 x 10 <sup>-30</sup>	492 - 653 (29.04%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
393	NR gi 8928013 sp O87906.1 C25AA_BACTJ RecName: Full=Pesticidal crystal protein cry25Aa; AltName: Full=76 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXVA(a); AltName: Full=Insecticidal protein Jeg74 >gnl BL_ORD_ID 1073455 insecticidal protein Jeg74 [Bacillus thuringiensis serovar jegathesan]	264	1.53 x 10 <sup>-29</sup>	66 - 308 (12.91%)
393	NR gi 8928013 sp O87906.1 C25AA_BACTJ RecName: Full=Pesticidal crystal protein cry25Aa; AltName: Full=76 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXVA(a); AltName: Full=Insecticidal protein Jeg74 >gnl BL_ORD_ID 1073455 insecticidal protein Jeg74 [Bacillus thuringiensis serovar jegathesan]	264	1.53 x 10 <sup>-29</sup>	66 - 308 (12.91%)
394	NR gi 228937265 ref ZP_04099945.1  hypothetical protein bthur0009_56320 [Bacillus thuringiensis serovar andalousiensis BGSC 4AW1] >gnl BL_ORD_ID 2585002 hypothetical protein bthur0009_56320 [Bacillus thuringiensis serovar andalousiensis BGSC 4AW1]	481	3.41 x 10 <sup>-29</sup>	207 - 635 (5.32%)
394	NR gi 228937265 ref ZP_04099945.1  hypothetical protein bthur0009_56320 [Bacillus thuringiensis serovar andalousiensis BGSC 4AW1] >gnl BL_ORD_ID 2585002 hypothetical protein bthur0009_56320 [Bacillus thuringiensis serovar andalousiensis BGSC 4AW1]	481	3.41 x 10 <sup>-29</sup>	207 - 635 (5.32%)
395	NR gi 316931334 gb ADU60186.1  Cry1B-like protein [Bacillus thuringiensis]	138	1.30 x 10 <sup>-28</sup>	403 - 540 (36.75%)
396	NR gi 228918661 ref ZP_04082087.1  Pesticidal crystal protein cry8Ba [Bacillus thuringiensis serovar pulsensis BGSC 4CC1] >gnl BL_ORD_ID 2593974 Pesticidal crystal protein cry8Ba [Bacillus thuringiensis serovar pulsensis BGSC 4CC1]	224	4.92 x 10 <sup>-28</sup>	31 - 237 (15.35%)
397	NR gi 194368060 gb ACF57950.1  Cry-like protein [Bacillus thuringiensis]	471	7.36 x 10 <sup>-24</sup>	27 - 466 (5.14%)
398	NR gi 167735631 emb CAQ03439.1  delta endotoxin [Bacillus thuringiensis]	115	1.25 x 10 <sup>-23</sup>	539 - 653 (44.61%)
399	NR gi 194368063 gb ACF57951.1  Cry-like protein [Bacillus thuringiensis]	472	4.77 x 10 <sup>-23</sup>	27 - 466 (5.16%)
400	NR gi 112180211 gb ABI13773.1  Cry1Ac [Bacillus thuringiensis] >gnl BL_ORD_ID 1479882 Cry1Ac [Bacillus thuringiensis]	129	8.13 x 10 <sup>-23</sup>	525 - 653 (39.06%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
401	NR gi 8928024 sp Q45754.1 C12AA_BACTU RecName: Full=Pesticidal crystal protein cry12Aa; AltName: Full=142 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIIA(a) >gnl BL_ORD_ID 1039268 delta-endotoxin [Bacillus thuringiensis]	608	2.37 x 10 <sup>-22</sup>	36 - 621 (3.87%)
402	NR gi 62719833 gb AAX93515.1  cry30-like protein [Bacillus thuringiensis]	473	4.04 x 10 <sup>-22</sup>	25 - 466 (5.05%)
403	NR gi 194368071 gb ACF57955.1  Cry-like protein [Bacillus thuringiensis]	466	6.88 x 10 <sup>-22</sup>	27 - 466 (5.25%)
404	NR gi 229065811 ref ZP_04201018.1  83-kDa crystal protein [Bacillus cereus AH603] >gnl BL_ORD_ID 2528391 83-kDa crystal protein [Bacillus cereus AH603]	331	2.62 x 10 <sup>-21</sup>	49 - 359 (8.31%)
405	NR gi 194368069 gb ACF57954.1  Cry-like protein [Bacillus thuringiensis]	397	8.42 x 10 <sup>-20</sup>	32 - 411 (6.28%)
406	NR gi 62548293 gb AAX86793.1  Cry1A toxin [Bacillus thuringiensis]	134	1.10 x 10 <sup>-19</sup>	90 - 223 (25.62%)
407	NR gi 188484668 gb ACD50894.1  Cry1C [Bacillus thuringiensis]	103	2.71 x 10 <sup>-18</sup>	552 - 653 (55.61%)
408	NR gi 39653331 gb AAR29332.1  Cry1A [Bacillus thuringiensis]	205	6.03 x 10 <sup>-18</sup>	244 - 443 (15.94%)
409	NR gi 39653329 gb AAR29331.1  Cry1A [Bacillus thuringiensis]	210	6.03 x 10 <sup>-18</sup>	243 - 443 (15.42%)
410	NR gi 225348555 gb ACN87261.1  Cry delta-endotoxin [Bacillus thuringiensis serovar kim]	234	1.03 x 10 <sup>-17</sup>	62 - 274 (12.60%)
410	NR gi 225348555 gb ACN87261.1  Cry delta-endotoxin [Bacillus thuringiensis serovar kim]	234	1.03 x 10 <sup>-17</sup>	62 - 274 (12.60%)
411	NR gi 76364130 sp P84613.1 CR4AA_BACTK RecName: Full=Insecticidal crystal toxin protein	264	3.91 x 10 <sup>-17</sup>	405 - 652 (11.33%)
412	NR gi 8928014 sp P56956.1 C21AA_BACTU RecName: Full=Pesticidal crystal protein cry21Aa; AltName: Full=132 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXXIA(a)	720	1.94 x 10 <sup>-16</sup>	15 - 653 (2.99%)
413	NR gi 23268634 gb AAN16462.1  insecticidal protein Cry1C [Bacillus thuringiensis]	197	5.64 x 10 <sup>-16</sup>	241 - 426 (18.55%)
414	NR gi 281202736 gb EFA76938.1  hypothetical protein PPL_09690 [Polysphondylium pallidum PN500]	387	2.80 x 10 <sup>-15</sup>	75 - 430 (6.07%)
415	NR gi 281202684 gb EFA76886.1  hypothetical protein PPL_09638 [Polysphondylium pallidum PN500]	286	6.24 x 10 <sup>-15</sup>	75 - 335 (9.41%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
416	NR gi 255036083 ref YP_003086704.1  delta endotoxin domain protein [Dyadobacter fermentans DSM 18053] >gnl BL_ORD_ID 390766 delta endotoxin domain protein [Dyadobacter fermentans DSM 18053]	245	2.37 x 10 <sup>-14</sup>	44 - 280 (10%)
417	NR gi 129307220 gb ABO30519.1  Cry2Af1 [Bacillus thuringiensis]	224	4.05 x 10 <sup>-14</sup>	36 - 253 (12.16%)
418	NR gi 21311715 gb AAM46818.1 AF490398_1 truncated CryIA(b) synthetic protein [synthetic construct]	40	2.01 x 10 <sup>-13</sup>	614 - 653 (250%)
419	NR gi 226314280 ref YP_002774176.1  hypothetical protein BBR47_46950 [Brevibacillus brevis NBRC 100599] >gnl BL_ORD_ID 2132015 hypothetical protein [Brevibacillus brevis NBRC 100599]	362	2.62 x 10 <sup>-13</sup>	14 - 349 (6.26%)
419	NR gi 226314280 ref YP_002774176.1  hypothetical protein BBR47_46950 [Brevibacillus brevis NBRC 100599] >gnl BL_ORD_ID 2132015 hypothetical protein [Brevibacillus brevis NBRC 100599]	362	2.62 x 10 <sup>-13</sup>	14 - 349 (6.26%)
420	NR gi 8927991 sp Q45760.1 CR5AA_BACUD RecName: Full=Pesticidal crystal protein cry5Aa; AltName: Full=152 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVA(a) >gnl BL_ORD_ID 1117181 delta-endotoxin [Bacillus thuringiensis]	616	2.62 x 10 <sup>-13</sup>	68 - 637 (3.74%)
421	NR gi 281202685 gb EFA76887.1  hypothetical protein PPL_09639 [Polysphondylium pallidum PN500]	295	5.84 x 10 <sup>-13</sup>	57 - 331 (8.16%)
422	NR gi 228962456 ref ZP_04123838.1  Cancer cell-killing Cry protein [Bacillus thuringiensis serovar pakistani str. T13001] >gnl BL_ORD_ID 2576208 Cancer cell-killing Cry protein [Bacillus thuringiensis serovar pakistani str. T13001]	414	1.70 x 10 <sup>-12</sup>	229 - 609 (6.30%)
423	NR gi 219937708 emb CAK29504.1  crystal protein [Bacillus thuringiensis]	222	1.70 x 10 <sup>-12</sup>	37 - 253 (11.77%)
424	NR gi 218086487 emb CAO78739.1  insecticidal crystal protein [Bacillus thuringiensis]	222	2.22 x 10 <sup>-12</sup>	37 - 253 (11.77%)
425	NR gi 228911453 ref ZP_04075251.1  Pesticidal crystal protein cry2Ad [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597467 Pesticidal crystal protein cry2Ad [Bacillus thuringiensis IBL 200]	222	4.95 x 10 <sup>-12</sup>	37 - 253 (11.57%)
426	NR gi 219939439 emb CAM32331.1  crystal protein cry2Ad4 [Bacillus thuringiensis]	222	4.95 x 10 <sup>-12</sup>	37 - 253 (11.57%)
427	NR gi 86161588 gb ABC86927.1  crystal protein Cry2Ad [Bacillus thuringiensis]	222	4.95 x 10 <sup>-12</sup>	37 - 253 (11.57%)
428	NR gi 81051716 gb ABB55273.1  crystal protein Cry2Ad2 [Bacillus thuringiensis]	222	4.95 x 10 <sup>-12</sup>	37 - 253 (11.57%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
429	NR gi 8927992 sp Q9RMG3.1 CR2AD_BACTU RecName: Full=Pesticidal crystal protein cry2Ad; AltName: Full=71 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIA(d) >gnl BL_ORD_ID 1002208 crystal protein [Bacillus thuringiensis]	222	4.95 x 10 <sup>-12</sup>	37 - 253 (11.57%)
430	NR gi 219942272 emb CAM83895.1  Cry2Ac11 protein [Bacillus thuringiensis]	221	8.43 x 10 <sup>-12</sup>	36 - 253 (11.67%)
431	NR gi 220683827 gb ACL80665.1  Cry2Ah2 [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
432	NR gi 219966119 emb CAM84575.1  cry2Ab11 delta endotoxin [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
433	NR gi 196212999 gb ACG76120.1  pesticidal crystal protein [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
434	NR gi 186694308 gb ACC86136.1  Cry2Ab [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
435	NR gi 72133015 gb AAZ66347.1  delta endotoxin [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
436	NR gi 85717888 gb ABC74968.1  crystal delta-endotoxin cry2Ab [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
437	NR gi 120431606 gb ABM21766.1  cry2Ab-type insecticidal crystal protein [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
438	NR gi 118566336 gb ABL01536.1  crystal protein [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
439	NR gi 114848912 gb ABI83671.1  insecticidal crystal protein Cry2Aa [Bacillus thuringiensis]	219	1.10 x 10 <sup>-11</sup>	35 - 253 (10.84%)
440	NR gi 31872007 gb AAP59457.1  crystal delta-endotoxin Cry2ab-HB [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
441	NR gi 27436036 gb AAO13296.1 AF336115_1 crystal delta-endotoxin [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
442	NR gi 86440155 gb ABC95996.1  Cry2Ab [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
443	NR gi 117328 sp P21254.1 CR2AB_BACTK RecName: Full=Pesticidal crystal protein cry2Ab; AltName: Full=71 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIA(b) >gnl BL_ORD_ID 828112 crystal protein CryIIB [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 828112 crystal protein B2 [Bacillus thuringiensis] >gnl BL_ORD_ID 828112 Cry2Ab [Bacillus thuringiensis]	222	1.10 x 10 <sup>-11</sup>	37 - 253 (11.57%)
444	NR gi 219940344 emb CAM09326.1  insecticidal crystal protein Cry2Ac9 [Bacillus thuringiensis]	221	1.88 x 10 <sup>-11</sup>	36 - 253 (11.47%)
445	NR gi 124841305 gb ABN15104.1  insecticidal crystal protein [Bacillus thuringiensis]	221	1.88 x 10 <sup>-11</sup>	36 - 253 (11.47%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
446	NR gi 66734543 gb AAY53629.1  Cry2Ac [Bacillus thuringiensis] >gnl BL_ORD_ID 105212 insecticidal crystal protein Cry2Ac [Bacillus thuringiensis serovar wuhanensis]	221	1.88 x 10 <sup>-11</sup>	36 - 253 (11.47%)
447	NR gi 37540131 gb AAG35410.1  insecticidal crystal protein Cry2Ac [Bacillus thuringiensis]	221	1.88 x 10 <sup>-11</sup>	36 - 253 (11.47%)
448	NR gi 169261300 gb ACA52278.1  Cry2Ac [Bacillus thuringiensis]	221	2.45 x 10 <sup>-11</sup>	36 - 253 (11.67%)
449	NR gi 219942274 emb CAM83896.1  Cry2Ac12 protein [Bacillus thuringiensis]	221	2.45 x 10 <sup>-11</sup>	36 - 253 (11.47%)
450	NR gi 219940342 emb CAM09325.1  insecticidal crystal protein Cry2Ac8 [Bacillus thuringiensis]	221	2.45 x 10 <sup>-11</sup>	36 - 253 (11.47%)
451	NR gi 218411090 emb CAL18690.1  cry2Ac7 protein [Bacillus thuringiensis]	221	2.45 x 10 <sup>-11</sup>	36 - 253 (11.47%)
452	NR gi 192758009 gb ACF04939.1  Cry2Aa [Bacillus thuringiensis serovar kenya]	214	2.45 x 10 <sup>-11</sup>	42 - 253 (11.57%)
453	NR gi 85717890 gb ABC74969.1  crystal delta-endotoxin cry2Ac [Bacillus thuringiensis]	224	2.45 x 10 <sup>-11</sup>	36 - 253 (11.56%)
454	NR gi 4239730 emb CAA10672.1  Cry2Aa protein [Bacillus thuringiensis]	219	2.45 x 10 <sup>-11</sup>	35 - 253 (10.84%)
455	NR gi 270209765 gb ACZ64281.1  delta endotoxin [Bacillus thuringiensis]	196	3.21 x 10 <sup>-11</sup>	63 - 253 (13.02%)
456	NR gi 150261176 gb ABR68091.1  Cry2Aa [synthetic construct]	219	3.21 x 10 <sup>-11</sup>	35 - 253 (10.84%)
457	NR gi 116248655 gb ABJ90464.1  Cry2Ad [Bacillus thuringiensis]	222	3.21 x 10 <sup>-11</sup>	37 - 253 (11.36%)
458	NR gi 27447952 gb AAO13734.1 AF252262_3 insecticidal crystal protein Cry2Aa [Bacillus thuringiensis]	219	3.21 x 10 <sup>-11</sup>	35 - 253 (10.84%)
459	NR gi 86440157 gb ABC95997.1  Cry2Ac [Bacillus thuringiensis]	221	3.21 x 10 <sup>-11</sup>	36 - 253 (11.47%)
460	NR gi 61252390 sp P0A378.1 CR2AA_BACTX RecName: Full=Pesticidal crystal protein cry2Aa; AltName: Full=71 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIA(a); AltName: Full=Mosquito factor; AltName: Full=P2 crystal protein >gnl BL_ORD_ID 1025044 insecticidal crystal protein [Bacillus thuringiensis]	219	3.21 x 10 <sup>-11</sup>	35 - 253 (10.84%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
461	NR gi 61221653 sp P0A377.1 CR2AA_BACTK RecName: Full=Pesticidal crystal protein cry2Aa; AltName: Full=71 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIA(a); AltName: Full=Mosquito factor; AltName: Full=P2 crystal protein >gnl BL_ORD_ID 929109 Chain A, Insecticidal Crystal Protein Cry2aa >gnl BL_ORD_ID 929109 Cry2Aa [Bacillus thuringiensis] >gnl BL_ORD_ID 929109 Cry2Aa [Bacillus thuringiensis] >gnl BL_ORD_ID 929109 P2 crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 929109 insecticidal crystal protein [Bacillus thuringiensis serovar kurstaki] >gnl BL_ORD_ID 929109 Cry2Aa [Bacillus thuringiensis] >gnl BL_ORD_ID 929109 Cry2Aa [Bacillus thuringiensis serovar tolworthi] >gnl BL_ORD_ID 929109 insecticidal Cry2Aa delta- endotoxin [synthetic construct]	219	3.21 x 10 <sup>-11</sup>	35 - 253 (10.84%)
462	NR gi 196213001 gb ACG76121.1  pesticial crystal protein [Bacillus thuringiensis]	222	4.19 x 10 <sup>-11</sup>	37 - 253 (11.36%)
463	NR gi 120431602 gb ABM21764.1  cry2A-type insecticidal crystal protein [Bacillus thuringiensis]	222	4.19 x 10 <sup>-11</sup>	37 - 253 (11.36%)
464	NR gi 5834516 emb CAA10670.2  Cry2A protein [Bacillus thuringiensis]	214	7.14 x 10 <sup>-11</sup>	42 - 253 (11.36%)
465	NR gi 4239728 emb CAA10671.1  Cry2Aa protein [Bacillus thuringiensis]	214	7.14 x 10 <sup>-11</sup>	42 - 253 (11.36%)
466	NR gi 33316454 gb AAQ04609.1 AF441855_1 Cry2Ab [Bacillus thuringiensis]	222	9.33 x 10 <sup>-11</sup>	37 - 253 (11.36%)
467	NR gi 47678765 emb CAD32378.1  insecticidal crystal protein Cry2Aa [Bacillus thuringiensis serovar kurstaki]	219	9.33 x 10 <sup>-11</sup>	35 - 253 (10.63%)
468	NR gi 159137703 gb ABW88931.1  Cry5B-like protein [Bacillus thuringiensis YBT-1518]	270	1.22 x 10 <sup>-10</sup>	43 - 273 (9.19%)
469	NR gi 204463026 gb ACI01644.1  truncated Cry5B [synthetic construct]	270	3.54 x 10 <sup>-10</sup>	43 - 273 (9.05%)
470	NR gi 8928021 sp Q45712.1 CR5BA_BACTU RecName: Full=Pesticidal crystal protein cry5Ba; AltName: Full=140 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVB(a) >gnl BL_ORD_ID 1030596 delta endotoxin [Bacillus thuringiensis]	270	3.54 x 10 <sup>-10</sup>	43 - 273 (9.05%)
471	NR gi 296491898 ref YP_003662363.1  hypothetical protein XNC1_p0080 [Xenorhabdus nematophila ATCC 19061] >gnl BL_ORD_ID 1532508 hypothetical protein XNC1_p0080 [Xenorhabdus nematophila ATCC 19061]	235	4.63 x 10 <sup>-10</sup>	37 - 259 (9.78%)



Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
472	NR gi 10719936 sp Q45358.1 C18AA_PAEPP RecName: Full=Parasporal crystal protein cry18Aa; AltName: Full=79 kDa crystal protein; AltName: Full=Crystalline parasporal protoxin; AltName: Full=Parasporal delta-endotoxin CryXVIII(a) >gnl BL_ORD_ID 1101942 parasporal crystal protein [Paenibacillus popilliae]	184	7.89 x 10 <sup>-10</sup>	76 - 258 (14.18%)
473	NR gi 66800187 ref XP_629019.1  hypothetical protein DDB_G0293578 [Dictyostelium discoideum AX4] >gnl BL_ORD_ID 231755 hypothetical protein DDB_G0293578 [Dictyostelium discoideum AX4]	258	7.89 x 10 <sup>-10</sup>	29 - 275 (9.31%)
474	NR gi 115635842 dbj BAF34368.1  hypothetical protein [Bacillus thuringiensis]	316	1.03 x 10 <sup>-9</sup>	31 - 307 (7.91%)
475	NR gi 8927990 sp Q45753.1 CR5AB_BACUD RecName: Full=Pesticidal crystal protein cry5Ab; AltName: Full=142 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVA(b) >gnl BL_ORD_ID 768265 delta-endotoxin [Bacillus thuringiensis]	603	1.03 x 10 <sup>-9</sup>	68 - 611 (3.85%)
476	NR gi 58864718 emb CAG27092.1  Cry9-like protein [Bacillus thuringiensis]	108	1.35 x 10 <sup>-9</sup>	237 - 340 (34.30%)
477	NR gi 37543234 gb AAL87458.1  83-KDa crystal protein [Bacillus thuringiensis]	316	1.35 x 10 <sup>-9</sup>	31 - 307 (7.91%)
478	NR gi 260268368 dbj BAI44022.1  M019CP78B [Bacillus thuringiensis]	284	1.76 x 10 <sup>-9</sup>	31 - 278 (9.18%)
479	NR gi 75812160 dbj BAE44984.1  hypothetical protein [Bacillus thuringiensis]	284	1.76 x 10 <sup>-9</sup>	31 - 278 (9.18%)
480	NR gi 148529679 gb ABQ82087.1  CryAd [Bacillus thuringiensis]	606	2.30 x 10 <sup>-9</sup>	68 - 615 (3.84%)
481	NR gi 114842167 dbj BAF32571.1  hypothetical protein [Bacillus thuringiensis]	293	2.30 x 10 <sup>-9</sup>	52 - 307 (8.39%)
482	NR gi 114842169 dbj BAF32572.1  hypothetical protein [Bacillus thuringiensis]	293	2.30 x 10 <sup>-9</sup>	52 - 307 (8.39%)
483	NR gi 88687362 dbj BAE79809.1  Cry31-like 82- kDa protein [Bacillus thuringiensis]	293	2.30 x 10 <sup>-9</sup>	52 - 307 (8.39%)
484	NR gi 75812158 dbj BAE44983.1  hypothetical protein [Bacillus thuringiensis]	284	2.30 x 10 <sup>-9</sup>	31 - 278 (9.18%)
485	NR gi 9798640 dbj BAB11757.1  81-kDa leukemia toxin [Bacillus thuringiensis] >gnl BL_ORD_ID 763067 Cry31-like 81-kDa protein [Bacillus thuringiensis]	293	2.30 x 10 <sup>-9</sup>	52 - 307 (8.39%)
486	NR gi 260268372 dbj BAI44026.1  M019CP78A [Bacillus thuringiensis]	293	3.00 x 10 <sup>-9</sup>	52 - 307 (8.39%)
487	NR gi 114842165 dbj BAF32570.1  hypothetical protein [Bacillus thuringiensis]	293	3.00 x 10 <sup>-9</sup>	52 - 307 (8.39%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
488	NR gi 228924900 ref ZP_04088053.1  hypothetical protein bthur0011_57960 [Bacillus thuringiensis serovar huazhongensis BGSC 4BD1] >gnl BL_ORD_ID 2589675 hypothetical protein bthur0011_57960 [Bacillus thuringiensis serovar huazhongensis BGSC 4BD1]	93	3.92 x 10 <sup>-9</sup>	95 - 187 (41.62%)
489	NR gi 22002424 dbj BAC06484.1  Cry21Ba1 [Bacillus thuringiensis serovar roskildiensis]	630	3.92 x 10 <sup>-9</sup>	49 - 611 (3.65%)
490	NR gi 75812164 dbj BAE44986.1  hypothetical protein [Bacillus thuringiensis]	261	3.92 x 10 <sup>-9</sup>	52 - 278 (9.84%)
491	NR gi 8469156 sp Q45743.1 CR2AC_BACTU RecName: Full=Pesticidal crystal protein cry2Ac; AltName: Full=70 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryIIA(c) >gnl BL_ORD_ID 1000810 CryIIC delta-endotoxin [Bacillus thuringiensis] >gnl BL_ORD_ID 1000810 delta endotoxin	221	3.92 x 10 <sup>-9</sup>	36 - 253 (11.26%)
492	NR gi 8927987 sp P56955.1 CR5AC_BACTU RecName: Full=Pesticidal crystal protein cry5Ac; AltName: Full=135 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryVA(c)	601	3.92 x 10 <sup>-9</sup>	68 - 611 (3.99%)
493	NR gi 75812162 dbj BAE44985.1  hypothetical protein [Bacillus thuringiensis]	261	5.12 x 10 <sup>-9</sup>	52 - 278 (9.84%)
494	NR gi 281210769 gb EFA84935.1  hypothetical protein PPL_01928 [Polysphondylium pallidum PN500]	349	6.68 x 10 <sup>-9</sup>	42 - 365 (6.40%)
495	NR gi 228911387 ref ZP_04075188.1  Pesticidal crystal protein cry11Bb [Bacillus thuringiensis IBL 200] >gnl BL_ORD_ID 2597516 Pesticidal crystal protein cry11Bb [Bacillus thuringiensis IBL 200]	197	1.49 x 10 <sup>-8</sup>	65 - 247 (12.62%)
496	NR gi 10719929 sp P57091.1 C18BA_PAEPP RecName: Full=Parasporal crystal protein cry18Ba; AltName: Full=76 kDa crystal protein; AltName: Full=Crystalline parasporal protoxin; AltName: Full=Parasporal delta-endotoxin CryXVIIIIB(a) >gnl BL_ORD_ID 776064 parasporal crystal protein Cry18Ba1 [Paenibacillus popilliae]	192	2.54 x 10 <sup>-8</sup>	63 - 252 (11.94%)
497	NR gi 10719930 sp P57092.1 C18CA_PAEPP RecName: Full=Parasporal crystal protein cry18Ca; AltName: Full=78 kDa crystal protein; AltName: Full=Crystalline parasporal protoxin; AltName: Full=Parasporal delta-endotoxin CryXVIIIIC(a) >gnl BL_ORD_ID 720151 parasporal crystal protein Cry18Ca1 [Paenibacillus popilliae]	200	5.66 x 10 <sup>-8</sup>	63 - 258 (12.75%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
498	NR gi 269103373 ref ZP_06156070.1  delta endotoxin [Photobacterium damsela subsp. damsela CIP 102761] >gnl BL_ORD_ID 1076342 delta endotoxin [Photobacterium damsela subsp. damsela CIP 102761]	230	7.39 x 10 <sup>-8</sup>	49 - 268 (10.97%)
499	NR gi 281208115 gb EFA82293.1  hypothetical protein PPL_04717 [Polysphondylium pallidum PN500]	254	1.26 x 10 <sup>-7</sup>	45 - 275 (9.61%)
500	NR gi 296445137 ref ZP_06887097.1  delta endotoxin domain protein [Methylosinus trichosporium OB3b] >gnl BL_ORD_ID 2143060 delta endotoxin domain protein [Methylosinus trichosporium OB3b]	221	2.15 x 10 <sup>-7</sup>	44 - 262 (12.49%)
501	NR gi 199612844 gb ACH91610.1  Cry2Ag [Bacillus thuringiensis]	156	2.15 x 10 <sup>-7</sup>	101 - 253 (16.03%)
502	NR gi 165970283 gb ABY76165.1  truncated insecticidal active protein delta-endotoxin Cry2 [Bacillus thuringiensis]	131	2.15 x 10 <sup>-7</sup>	123 - 253 (19.81%)
503	NR gi 322692586 gb EFY84486.1  putative mosquitocidal toxin [Metarhizium acridum CQMa 102]	165	2.81 x 10 <sup>-7</sup>	49 - 201 (17.26%)
504	NR gi 315435795 gb ADU18270.1  Cry9-like protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839280 Cry9-like protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839280 Cry9-like protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839280 Cry9-like protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839280 Cry9-like protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839280 Cry9-like protein [Bacillus thuringiensis] >gnl BL_ORD_ID 839280 Cry9-like protein [Bacillus thuringiensis]	56	8.17 x 10 <sup>-7</sup>	598 - 652 (105.23%)
505	NR gi 8469165 sp Q45755.1 C13AA_BACTU RecName: Full=Pesticidal crystal protein cry13Aa; AltName: Full=88 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIIIA(a) >gnl BL_ORD_ID 766078 delta-endotoxin [Bacillus thuringiensis]	644	8.17 x 10 <sup>-7</sup>	31 - 613 (3.30%)
506	NR gi 228962686 ref ZP_04123980.1  Pesticidal crystal protein cry5Ba [Bacillus thuringiensis serovar pakistani str. T13001] >gnl BL_ORD_ID 2576078 Pesticidal crystal protein cry5Ba [Bacillus thuringiensis serovar pakistani str. T13001]	305	1.07 x 10 <sup>-6</sup>	31 - 319 (7.10%)
507	NR gi 228961871 ref ZP_04123426.1  Pesticidal crystal protein cry5Ba [Bacillus thuringiensis serovar pakistani str. T13001] >gnl BL_ORD_ID 2437146 Pesticidal crystal protein cry5Ba [Bacillus thuringiensis serovar pakistani str. T13001]	701	1.07 x 10 <sup>-6</sup>	49 - 647 (2.81%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
508	NR gi 215434901 gb ACJ66848.1  insecticidal crystal protein [Bacillus thuringiensis]	160	2.38 x 10 <sup>-6</sup>	97 - 253 (16.41%)
509	NR gi 20091447 ref NP_617522.1  hypothetical protein MA2621 [Methanosarcina acetivorans C2A] >gnl BL_ORD_ID 1572561 hypothetical protein MA_2621 [Methanosarcina acetivorans C2A]	117	4.05 x 10 <sup>-6</sup>	171 - 280 (27.03%)
510	NR gi 228962776 ref ZP_04124038.1  Pesticidal crystal protein cry5Aa [Bacillus thuringiensis serovar pakistani str. T13001] >gnl BL_ORD_ID 2576020 Pesticidal crystal protein cry5Aa [Bacillus thuringiensis serovar pakistani str. T13001]	681	9.03 x 10 <sup>-6</sup>	49 - 648 (3.11%)
511	NR gi 8928023 sp Q45730.1 C11BA_BACTJ RecName: Full=Pesticidal crystal protein cry11Ba; AltName: Full=81 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIB(a) >gnl BL_ORD_ID 1017633 mosquitocidal toxin [Bacillus thuringiensis]	272	1.54 x 10 <sup>-5</sup>	78 - 329 (7.57%)
512	NR gi 66805043 ref XP_636254.1  hypothetical protein DDB_G0289249 [Dictyostelium discoideum AX4] >gnl BL_ORD_ID 238327 hypothetical protein DDB_G0289249 [Dictyostelium discoideum AX4]	289	2.01 x 10 <sup>-5</sup>	42 - 313 (7.54%)
513	NR gi 8928020 sp Q45710.1 C14AA_BACTS RecName: Full=Pesticidal crystal protein cry14Aa; AltName: Full=132 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIVA(a) >gnl BL_ORD_ID 1099400 delta endotoxin [Bacillus thuringiensis]	730	4.48 x 10 <sup>-5</sup>	31 - 653 (2.65%)
514	NR gi 6010670 gb AAF01213.1  endotoxin [Bacillus thuringiensis]	89	5.85 x 10 <sup>-5</sup>	56 - 142 (35.35%)
515	NR gi 298162158 gb ADI59541.1  delta-endotoxin [Bacillus thuringiensis]	184	7.65 x 10 <sup>-5</sup>	53 - 232 (12.99%)
516	NR gi 281208114 gb EFA82292.1  hypothetical protein PPL_04716 [Polysphondylium pallidum PN500]	215	9.99 x 10 <sup>-5</sup>	75 - 279 (11.25%)
517	NR gi 73540082 ref YP_294602.1  twin-arginine translocation pathway signal [Ralstonia eutropha JMP134] >gnl BL_ORD_ID 1971878 Twin-arginine translocation pathway signal [Ralstonia eutropha JMP134]	233	0.00	51 - 272 (10.13%)
518	NR gi 281202683 gb EFA76885.1  hypothetical protein PPL_09637 [Polysphondylium pallidum PN500]	315	0.00	82 - 376 (6.95%)
519	NR gi 268638087 ref XP_002649171.1  N-terminal delta endotoxin domain-containing protein [Dictyostelium discoideum AX4] >gnl BL_ORD_ID 510422 N-terminal delta endotoxin domain-containing protein [Dictyostelium discoideum AX4]	204	0.00	35 - 212 (11.29%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
520	NR gi 228905289 ref ZP_04069274.1  Pesticidal crystal protein cry11Bb [Bacillus thuringiensis IBL 4222] >gnl BL_ORD_ID 2601718 Pesticidal crystal protein cry11Bb [Bacillus thuringiensis IBL 4222]	179	0.00	58 - 232 (13.73%)
521	NR gi 159141846 gb ABW89739.1  Cry4d [Bacillus thuringiensis]	179	0.00	58 - 232 (13.73%)
522	NR gi 159141842 gb ABW89737.1  Cry4d [Bacillus thuringiensis]	179	0.00	58 - 232 (13.73%)
523	NR gi 161598562 ref YP_001573776.1  pesticidal crystal protein cry11AA [Bacillus thuringiensis serovar israelensis] >gnl BL_ORD_ID 1085592 RecName: Full=Pesticidal crystal protein cry11Aa; AltName: Full=72 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIA(a) >gnl BL_ORD_ID 1085592 mosquito-toxic crystal protein [Bacillus thuringiensis] >gnl BL_ORD_ID 1085592 pesticidal crystal protein cry11AA [Bacillus thuringiensis serovar israelensis]	179	0.00	58 - 232 (13.73%)
524	NR gi 8928042 sp Q9ZIU5.1 C11BB_BACTV RecName: Full=Pesticidal crystal protein cry11Bb; AltName: Full=84 kDa crystal protein; AltName: Full=Crystalline entomocidal protoxin; AltName: Full=Insecticidal delta-endotoxin CryXIB(b) >gnl BL_ORD_ID 774326 d-endotoxin [Bacillus thuringiensis]	100	0.00	140 - 232 (28%)
525	NR gi 281204819 gb EFA79014.1  hypothetical protein PPL_08482 [Polysphondylium pallidum PN500]	264	0.00	29 - 280 (8.32%)
526	NR gi 159141852 gb ABW89742.1  Cry4d [Bacillus thuringiensis]	179	0.00	58 - 232 (13.73%)
527	NR gi 159141848 gb ABW89740.1  Cry4d [Bacillus thuringiensis]	179	0.00	58 - 232 (13.73%)
528	NR gi 159141844 gb ABW89738.1  Cry4d [Bacillus thuringiensis]	168	0.00	58 - 221 (14.88%)
529	NR gi 66811090 ref XP_639253.1  N-terminal delta endotoxin domain-containing protein [Dictyostelium discoideum AX4] >gnl BL_ORD_ID 238886 N-terminal delta endotoxin domain-containing protein [Dictyostelium discoideum AX4]	204	0.00	35 - 212 (11.29%)
530	NR gi 107770592 gb ABF83903.1  Cry1AB-like protein [Bacillus thuringiensis]	160	0.00	494 - 638 (21.09%)
531	NR gi 159141850 gb ABW89741.1  Cry4d [Bacillus thuringiensis]	142	0.00	58 - 197 (16.37%)
532	NR gi 281206492 gb EFA80678.1  hypothetical protein PPL_06262 [Polysphondylium pallidum PN500]	165	0.00	70 - 233 (15.42%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
533	NR gi 228988829 ref ZP_04148890.1  Pesticidal crystal protein cry7Aa [Bacillus thuringiensis serovar tochiensis BGSC 4Y1] >gnl BL_ORD_ID 2562311 Pesticidal crystal protein cry7Aa [Bacillus thuringiensis serovar tochiensis BGSC 4Y1]	54	0.00	51 - 100 (82.30%)
534	NR gi 281204787 gb EFA78982.1  hypothetical protein PPL_08450 [Polysphondylium pallidum PN500]	261	0.01	29 - 280 (7.78%)
535	NR gi 188032674 emb CAO78672.1  delta toxin fusion protein [Zea mays]	21	0.01	633 - 653 (476.19%)
536	NR gi 188032668 emb CAO78669.1  delta toxin fusion protein [Zea mays]	21	0.01	633 - 653 (476.19%)
537	NR gi 188032666 emb CAO78668.1  delta toxin fusion protein [Zea mays subsp. mays]	21	0.01	633 - 653 (476.19%)
538	NR gi 188032662 emb CAO78666.1  delta toxin fusion protein [Zea mays]	21	0.01	633 - 653 (476.19%)
539	NR gi 188032660 emb CAO78665.1  delta toxin fusion protein [Zea mays] >gnl BL_ORD_ID 340482 delta toxin fusion protein [Zea mays]	21	0.01	633 - 653 (476.19%)
540	NR gi 188032651 emb CAO78659.1  truncated delta toxin [Bacillus thuringiensis] >gnl BL_ORD_ID 340478 truncated delta toxin [Bacillus thuringiensis] >gnl BL_ORD_ID 340478 truncated delta toxin [Bacillus thuringiensis]	21	0.01	633 - 653 (476.19%)
541	NR gi 408121 emb CAA29174.1  unnamed protein product [Bacillus thuringiensis]	111	0.02	15 - 120 (19.48%)
542	NR gi 68348789 gb AA96321.1  cry4A insecticidal protein [Bacillus thuringiensis]	142	0.02	526 - 652 (21.32%)
543	NR gi 281204813 gb EFA79008.1  hypothetical protein PPL_08476 [Polysphondylium pallidum PN500]	242	0.03	49 - 280 (8.71%)
544	NR gi 281212015 gb EFA86176.1  hypothetical protein PPL_00738 [Polysphondylium pallidum PN500]	84	0.04	38 - 119 (36.85%)
545	NR gi 281203807 gb EFA78003.1  hypothetical protein PPL_08648 [Polysphondylium pallidum PN500]	118	0.04	70 - 186 (22.98%)
546	NR gi 188032664 emb CAO78667.1  delta toxin fusion protein [Zea mays]	21	0.04	633 - 653 (453.52%)
547	NR gi 90578253 ref ZP_01234064.1  Twin-arginine translocation pathway signal [Vibrio angustum S14] >gnl BL_ORD_ID 185282 Twin-arginine translocation pathway signal [Vibrio angustum S14]	157	0.05	30 - 184 (15.41%)
548	NR gi 281211979 gb EFA86140.1  N-terminal delta endotoxin domain-containing protein [Polysphondylium pallidum PN500]	51	0.06	69 - 119 (76.90%)

Alignment rank	Protein name	Amino acid length	E-value	Query range and identity
549	NR gi 281211975 gb EFA86136.1  hypothetical protein PPL_00697 [Polysphondylium pallidum PN500]	51	0.06	69 - 119 (76.90%)
550	NR gi 281206424 gb EFA80611.1  hypothetical protein PPL_06550 [Polysphondylium pallidum PN500]	268	0.06	27 - 281 (7.24%)



# APPENDIX B. Sources of the Cry proteins showing significant sequence similarity to the eCry3.1Ab amino acid sequence in a BLASTP analysis

Organism	No. of proteins	E-value
<i>Bacillus</i> sp.	1	$6.5 \times 10^{-121}$
<i>Bacillus cereus</i>	1	$2.6 \times 10^{-21}$
<i>Bacillus thuringiensis</i>	452	0 - 0.0208
<i>Bacillus weihenstephanensis</i>	1	$5.3 \times 10^{-91}$
Chloroplast transformation	1	$5.9 \times 10^{-122}$
<i>Clostridium bifermentans</i>	2	$3.6 \times 10^{-39}$ - $1.0 \times 10^{-33}$
<i>Dyadobacter fermentans</i>	1	$2.4 \times 10^{-14}$
<i>Lysinibacillus sphaericus</i>	3	$4.1 \times 10^{-43}$ - $6.6 \times 10^{-41}$
<i>Metarhizium acridum</i>	1	$2.8 \times 10^{-7}$
<i>Methanosarcina acetivorans</i>	1	$4.1 \times 10^{-6}$
<i>Methylosinus trichosporium</i>	1	$2.1 \times 10^{-7}$
<i>Paenibacillus lentimorbus</i>	3	$1.6 \times 10^{-90}$ - $6.8 \times 10^{-62}$
<i>Paenibacillus popilliae</i>	4	$1.3 \times 10^{-89}$ - $5.7 \times 10^{-8}$
<i>Zea mays</i>	6	0.0122 - 0.0355
synthetic construct	29	0 - $3.5 \times 10^{-10}$
uncultured <i>Bacillus</i>	1	$1.0 \times 10^{-102}$

**APPENDIX C. Sources of the hypothetical / unknown proteins showing significant sequence similarity to the eCry3.1Ab amino acid sequence in a BLASTP analysis**

Organism	No. of proteins	E-value
<i>Bacillus thuringiensis</i>	3	$1.0 \times 10^{-9}$ - 0.0159
<i>Brevibacillus brevis</i>	2	$2.6 \times 10^{-13}$ - 0.0042
<i>Dictyostelium discoideum</i>	4	$7.9 \times 10^{-10}$ - 0.0005
<i>Photobacterium damsela</i>	1	$7.4 \times 10^{-8}$
<i>Polysphondylium pallidum</i>	16	$2.8 \times 10^{-15}$ - 0.0605
<i>Xenorhabdus nematophila</i>	1	$4.6 \times 10^{-10}$

**APPENDIX D. Source of the parasporins showing significant sequence similarity to the eCry3.1Ab amino acid sequence in a BLASTP analysis**

Organism	No. of proteins	E-value
<i>Bacillus thuringiensis</i>	18	$1.1 \times 10^{-54}$ - $5.1 \times 10^{-9}$

**APPENDIX E. Sources of the twin arginine proteins showing significant sequence similarity to the eCry3.1Ab amino acid sequence in a BLASTP analysis**

Organism	No. of proteins	E-value
<i>Ralstonia eutropha</i>	1	0.0002
<i>Vibrio angustum</i>	1	0.0464