GENETIC ELEMENT (GENE)

BCH-GENE-SCBD-43634-3

LAST UPDATED: 22 MAR 2013

General information

Name of genetic element

mCry3A EN

Abbreviation

CS-mCry3A EN

Category

Protein coding sequence

Is this genetic element a synthetic molecule?

Yes

Donor organism

Donor organism(s)

BCH-ORGA-SCBD-45614-11 ORGANISM | BACILLUS THURINGIENSIS (BT, BACILLUS, BACTU) | Bacteria

Point of collection or acquisition of the donor organism(s)

Subspecies: tenebrionis EN

Characteristics of the protein coding sequence

Name of the protein expressed by the coding sequence

mCry3A delta-endotoxin EN

Biological function of the protein

mCry3A delta-endotoxin is a synthetic, maize optimized, modified cry3A (mcry3A) gene whose expression produces a mCry3A insect control protein that is a member of a class of proteins which occur naturally in the gram-positive soil bacterium Bacillus thuringiensis subsp. tenebrionis.

Additional changes in this maize-optimized gene were made, such that the mCry3A protein has enhanced activity against the western corn rootworm and other related pests: (1) its N-terminus corresponds to methionine-48 of the native protein and (2) a cathepsin-G protease

EN

recognition site has been introduced, beginning at amino acid residue 155 of the native protein. This cathepsin-G recognition site has the sequence alanine-alanine-proline-phenylalanine, and has replaced the amino acids valine-155, serine-156, and serine-157 in the native protein. The consensus recognition site for cathepsin-G was determined to be alanine-alanine-proline-phenylalanine.

Related trait(s) or use(s) in biotechnology

Resistance to diseases and pests
Insects
Coleoptera (beetles)
Western corn rootworm (Diabrotica virgifera)

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Further Information

Questions about the Cartagena Protocol on Biosafety or the operation of the Biosafety Clearing-House may be directed to the Secretariat of the Convention on Biological Diversity.

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