

## Biosafety Clearing-House (BCH)

GENETIC ELEMENT (GENE)

BCH-GENE-SCBD-14974-7

LAST UPDATED: 23 FEB 2021

### General information

Name of genetic element

Barstar

EN

Abbreviation

CS-barstar-BACAM

EN

Category

Protein coding sequence

Is this genetic element a synthetic molecule?

No

### Donor organism

Donor organism(s)

[BCH-ORGA-SCBD-12122-6](#) ORGANISM | BACILLUS AMYLOLIQUEFACIENS (BACAM) |

Bacteria

### Characteristics of the protein coding sequence

Name of the protein expressed by the coding sequence

barstar ribonuclease inhibitor

EN

Biological function of the protein

The barstar gene from *Bacillus amyloliquefaciens* encodes a specific ribonuclease inhibitor (barstar enzyme) expressed only in the tapetum cells of the pollen sac during anther development.

The barstar enzyme specifically inhibits barnase RNase. Together, the barnase RNase and the barstar form a very stable one-to-one complex, in which the RNase is inactivated. As a result, when pollen from the restorer line is crossed to the male sterile line, the resultant progeny express the RNase inhibitor in the tapetum cells of the anthers allowing hybrid plants to develop normal anthers and restore fertility.

Also, the barstar gene may be used to prevent the barnase RNase from disrupting the

EN

development of bacteria in which the introduced DNA was prepared during the transformation process.

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

Changes in physiology and/or production  
Reproduction  
Fertility restoration

### Additional Information

Other relevant website addresses and/or attached documents

? [Barstar- Wikipedia](#) ( *English* )

[BCH-GENE-SCBD-14974-7](#)

## 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.

### **Secretariat of the Convention on Biological Diversity**

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