

## Gene Section

### Mini Review

# BBC3 (BCL2 binding component 3)

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## Identity

**Other names:** PUMA (p53-upregulated modulator of apoptosis); JFY1

**HGNC (Hugo):** BBC3

**Location:** 19q13.3-q13.4

## DNA/RNA

### Description

The gene spans 12kb on the reverse strand; 8 exons.

### Transcription

Numerous transcripts.

## Protein

### Description

Multiple isoforms; BH3 only protein (the BH3 domain is essential for proapoptotic function).

### Expression

Wide.

### Localisation

Mitochondria.

### Function

BBC3 is transcriptionally induced upon diverse apoptotic stimuli to induce apoptosis via the mitochondrial apoptotic pathway. BBC3 is transcriptionally activated by p53; it is also upregulated after endoplasmic reticulum stress, independently to P53 status. BBC3 is also transactivated by p73, a p53 related protein with, also, G1 cell cycle arrest and apoptosis functions. BBC3 induces BAX conformational change and multimerization.

## Homology

Bcl2 family members:

The antiapoptotic members with BH 1 to 4 domains:

BCL2 (18q21), BCL1L1/BCLX-L (20q11), BCL2L2/BCL-W (14q11), BCL1L10/BCL-B/BOO/DIVA (15q21), BCL2A1/BFL1/A1 (15q24), BNIP1/EIB-19K (5q33), MCL1 (1q21).

The proapoptotic members with BH 1 to 3 domains:

BAK1/BCL2L7 (6p21), BAX (19q13), BCL2L13/BCL-Rambo/MIL1 (22q11), BOK/MTD/BCL2L9 (2q37).

The only-BH3 apoptotic members:

BAD/BCL2L8/BBC2 (11q13), BCL2L11/BIM/BOD (2q13), BID (22q11), BIK/NBK/BBC1 (22q13), BLK (8p23), BMF (15q14), BNIP3/NIP3 (10q26), BMIP3L/NIX (8p21), HRK/DP5/BID3 (12q24), PMAIP1/NOXA (18q21).

## Implicated in

### Note

BBC3 mediates apoptosis in various cancer cells.

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