Title (en)

IMPAIRED BRCA2 FUNCTION IN CELLS AND NON-HUMAN TRANSGENIC ANIMALS

Title (de)

GESTÖRTE BRCA2-FUNKTION IN ZELLEN UND NICHT-MENSCHLICHEN, TRANSGENEN TIEREN

Title (fr)

ALTERATION FONCTIONNELLE DU GENE BRCA2 DANS DES CELLULES ET DES ANIMAUX TRANSGENIQUES NON HUMAINS

Publication

**EP 1025203 A4 20030604 (EN)**

Application

**EP 98942233 A 19980825**

Priority

- US 9817566 W 19980825
- US 5697397 P 19970826

Abstract (en)

[origin: WO9910479A1] ScRad51, a member of the RAD52 epistasis group in Saccharomyces cerevisiae, is a major component in the recombinational repair pathway employed to repair genetic damage caused by ionizing radiation. The mouse homologue of ScRad51, MmRad51, appears to have a similar function; however, the precise mechanism of action is not well understood. For ScRad51, protein:protein associations are critical for function. Therefore, the yeast two-hybrid system was used to isolate proteins that associate with MmRad51 to better understand recombinational repair in mammalian cells and mouse Brca2 was isolated. In humans, BRCA2, is a tumor suppressor gene important in the etiology of breast cancer. A phenotypic comparison between MmRad51 and Brca2-deficient embryos and cells suggest the protein:protein association is important for their function. Similar to MmRad51, Brca2 function is critical for repair of gamma -radiation induced damage. In addition, a subtle mutation that removes only the small portion of Brca2 that associates with MmRad51, either directly or indirectly, exhibited a phenotype that suggests partial function. These homozygous mutant cells are viable yet hypersensitive to ionizing radiation and undergo premature replicative senescence. Cells and mice were generated with impaired Brca2 function that should prove useful as a model for tumorigenesis, a model to analyze genotoxic agents and as a tool to study premature replicative senescence.

IPC 1-7

**C12N 5/00**; C12N 15/00; C12N 15/09; C12N 15/63

IPC 8 full level

**A01K 67/027** (2006.01); **C07K 14/47** (2006.01); **C12N 5/10** (2006.01); **C12N 15/09** (2006.01); **C12N 15/85** (2006.01); **C12Q 1/68** (2006.01); **G01N 33/15** (2006.01); **G01N 33/50** (2006.01)

CPC (source: EP)

**A01K 67/0275** (2013.01); **C07K 14/4703** (2013.01); **C12N 15/8509** (2013.01); A01K 2217/05 (2013.01); A01K 2217/075 (2013.01); A01K 2227/105 (2013.01); A01K 2267/0331 (2013.01)

Citation (search report)

- [PXT] MORIMATSU MASAMI ET AL: "Cells deleted for Brac2 COOH terminus exhibit hypersensitivity to gamma-radiation and premature senescence.", CANCER RESEARCH, vol. 58, no. 15, 1 August 1998 (1998-08-01), pages 3441 - 3447, XP001146700, ISSN: 0008-5472
- [T] MOYNAHAN MARY ELLEN ET AL: "BRCA2 is required for homology-directed repair of chromosomal breaks.", MOLECULAR CELL, vol. 7, no. 2, February 2001 (2001-02-01), pages 263 - 272, XP002236921, ISSN: 1097-2765
- [A] PHELAN C M ET AL: "MUTATION ANALYSIS OF TEH BRCA2 GENE IN49 SITE-SPECIFIC BREAST CANCER FAMILIES", NATURE GENETICS, NEW YORK, NY, US, vol. 13, 1 January 1996 (1996-01-01), pages 120 - 122, XP000791102, ISSN: 1061-4036
- [A] TAVTIGIAN S V ET AL: "The complete BRCA2 gene and mutations in chromosome 13q-linked kindreds", NATURE GENETICS, NEW YORK, NY, US, vol. 3, no. 12, 1 March 1996 (1996-03-01), pages 333 - 337, XP002076942, ISSN: 1061-4036
- [T] SARKISIAN CHRISTOPHER J ET AL: "Analysis of murine Brca2 reveals conservation of protein-protein interactions but differences in nuclear localization signals.", JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 276, no. 40, 5 October 2001 (2001-10-05), pages 37640 - 37648, XP002236922, ISSN: 0021-9258
- [A] BIGNELL G ET AL: "The BRC repeats are conserved in mammalian BRCA2 proteins", HUMAN MOLECULAR GENETICS, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 6, no. 1, 1997, pages 53 - 58, XP002091555, ISSN: 0964-6906
- See references of WO 9910479A1

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

**WO 9910479 A1 19990304**; AU 757433 B2 20030220; AU 9033498 A 19990316; CA 2301871 A1 19990304; EP 1025203 A1 20000809; EP 1025203 A4 20030604; JP 2001513991 A 20010911

DOCDB simple family (application)

**US 9817566 W 19980825**; AU 9033498 A 19980825; CA 2301871 A 19980825; EP 98942233 A 19980825; JP 2000507787 A 19980825