

## Gene Section

### Mini Review

# MMP11 (matrix metalloproteinase 11 (stromelysin 3))

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## Identity

**Other names:** ST3 (stromelysin-3); MMP-11 (matrix metalloproteinase 11)

**HGNC (Hugo):** MMP11

**Location:** 22q11.2

## DNA/RNA

### Description

8 exons and 7 introns spanning 11.5 kb; cDNA: 2247 bp, coding sequence 1464 bp.

### Transcription

Expression is induced by retinoic acid and TPA through a DR1-type responsive element and a C/EBP binding site, respectively, expression is induced by epithelial cells in a paracrin manner.

## Protein

### Description

488 amino-acids; 51 kDa; functional domains: signal peptide, targeting the protein to the secretory pathway, prodomain containing a furin-type cleavage site responsible for the intracellular activation, catalytic domain containing a zinc binding site, hemopexin-like domain.

### Expression

Cells of mesenchymal origin, notably fibroblastic cells, macrophages, osteoclasts.

### Function

Extracellular zinc-dependent proteinase expressed during tissue remodelling processes (development,

wound healing) and whose specific substrate is unknown.

### Homology

Member of the matrix metalloproteinases (MMP) subfamily of matrixins.

## Implicated in

### various cancer:

#### Disease

Expression of ST3 in 80 to 100% invasive carcinomas of the breast, colon, head and neck, lung, ovary, pancreas, prostate, skin (basal cell carcinoma), uterus (cervix carcinoma and endometrial carcinoma) and in some non-invasive carcinomas that have a high risk of evolving towards invasion; also expression in: fibroblastic stromal cells in the close vicinity of cancerous epithelial cells.

#### Prognosis

Prognostic factor of invasion and aggressiveness of the tumors.

## References

Basset P, Bellocq JP, Wolf C, Stoll I, Hutin P, Limacher JM, Podhajcer OL, Chenard MP, Rio MC, Chambon P. A novel metalloproteinase gene specifically expressed in stromal cells of breast carcinomas. *Nature*. 1990 Dec 20-27;348(6303):699-704

Rouyer N, Wolf C, Chenard MP, Rio MC, Chambon P, Bellocq JP, Basset P. Stromelysin-3 gene expression in human cancer: an overview. *Invasion Metastasis*. 1994-1995;14(1-6):269-75

Anglard P, Melot T, Guérin E, Thomas G, Basset P. Structure and promoter characterization of the human stromelysin-3 gene. *J Biol Chem*. 1995 Sep 1;270(35):20337-44

Chenard MP, O'Siorain L, Shering S, Rouyer N, Lutz Y, Wolf C, Basset P, Bellocq JP, Duffy MJ. High levels of stromelysin-3 correlate with poor prognosis in patients with breast carcinoma. *Int J Cancer*. 1996 Dec 20;69(6):448-51

Ahmad A, Hanby A, Dublin E, Poulsom R, Smith P, Barnes D, Rubens R, Anglard P, Hart I. Stromelysin 3: an independent prognostic factor for relapse-free survival in node-positive breast cancer and demonstration of novel breast carcinoma cell expression. *Am J Pathol*. 1998 Mar;152(3):721-8

Mari BP, Anderson IC, Mari SE, Ning Y, Lutz Y, Kobzik L, Shipp MA. Stromelysin-3 is induced in tumor/stroma cocultures and inactivated via a tumor-specific and basic fibroblast growth factor-dependent mechanism. *J Biol Chem*. 1998 Jan 2;273(1):618-26

Masson R, Lefebvre O, Noël A, Fahime ME, Chenard MP, Wendling C, Kebers F, LeMeur M, Dierich A, Foidart JM, Basset P, Rio MC. In vivo evidence that the stromelysin-3 metalloproteinase contributes in a paracrine manner to epithelial cell malignancy. *J Cell Biol*. 1998 Mar 23;140(6):1535-41

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