

Gene name: **MMP8** Previous HGNC Symbols for MMP8 Gene: CLG1

External Ids for MMP8 Gene: HGNC: [7175](#) NCBI Gene: [4317](#) Ensembl: [ENSG00000118113](#)

OMIM®: [120355](#) UniProtKB/Swiss-Prot: [P22894](#)

NCBI Gene Summary: This gene encodes a member of the matrix metalloproteinase (MMP) family of proteins. These proteins are involved in the **breakdown of extracellular matrix in embryonic development, reproduction, and tissue remodeling**, as well as in disease processes, such as arthritis and metastasis. Proteolysis at different sites on this protein results in multiple active forms of the enzyme with distinct N-termini. This protein functions in the degradation of type I, II and III collagens. The gene is part of a cluster of MMP genes which localize to chromosome 11q22.3. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Jan 2015]

GeneCards Summary: MMP8 (Matrix Metalloproteinase 8) is a Protein Coding gene. Diseases associated with MMP8 include [Preterm Premature Rupture Of The Membranes](#) and [Gingivitis](#). Among its related pathways are [Matrix metalloproteinases](#) and [Innate Immune System](#). Gene Ontology (GO) annotations related to this gene include *calcium ion binding* and *metalloendopeptidase activity*. An important paralog of this gene is [MMP1](#).

UniProtKB/Swiss-Prot Summary: Can degrade fibrillar type I, II, and III collagens. ([MMP8_HUMAN,P22894](#))

Cellular localization: mostly in extracellular.

Full Name: *Matrix Metalloproteinase 8*

Protein Type: Metalloproteinase enzyme (zinc-dependent endopeptidase)

Family: Matrix Metalloproteinases (MMPs)



Biological Function of MMP8

MMP8 encodes neutrophil collagenase, an enzyme involved in extracellular matrix (ECM) remodeling and inflammatory regulation.



Main Functions:

1. Degrades collagens and ECM proteins:
 - Especially type I, II, and III collagens
 - Facilitates tissue remodeling, wound healing, and immune cell migration
2. Stored in neutrophil granules:
 - Released upon neutrophil activation
 - Acts locally at sites of infection/inflammation
3. Modulates cytokine signaling:
 - Can cleave and modify cytokines and chemokines
 - Influences inflammatory responses and immune cell recruitment
4. Immunoregulatory roles:
 - Emerging evidence suggests MMP8 also contributes to resolution of inflammation
 - May help resolve neutrophil-driven damage



Role of MMP8 in Sepsis

MMP8 is a key effector in neutrophil-dominated immune responses, including sepsis.

Early Sepsis:

- Upregulated expression and release from neutrophils
- Promotes:
 - Neutrophil infiltration
 - Degradation of tissue barriers to allow immune access
 - Activation of inflammatory signaling pathways

Excessive/Uncontrolled Sepsis:

- High MMP8 activity can:
 - Damage endothelial cells
 - Break down protective tissue structures
 - Exacerbate vascular leakage
 - Contribute to organ injury, especially in lungs, kidneys, and liver
- MMP8 also amplifies inflammatory damage via:
 - Cleavage of cytokines, making them more active
 - Matrix degradation, releasing stored inflammatory mediators



Clinical Relevance of MMP8 in Sepsis

Diagnostic Role:

- **Elevated MMP8 expression** is consistently observed in:
 - Neutrophils of septic patients
 - Sepsis-related transcriptomic signatures
- **Plasma MMP8** levels correlate with:
 - Neutrophil activation
 - Tissue injury

Prognostic Role:

- High MMP8 levels are associated with:
 - Worse outcomes
 - Organ failure
 - Higher mortality, particularly in septic shock and ARDS

Therapeutic Potential:

- MMP8 inhibition in experimental models can:
 - Reduce inflammation
 - Preserve tissue integrity
 - Improve survival
- MMP inhibitors have been considered in ARDS and systemic inflammatory diseases, but clinical use is limited by side effects.

Supporting Literature

Doi: 10.1016/j.phrs.2011.06.019

Doi: 10.1097/CCM.0b013e318232e404

Doi: 10.3389/fmed.2022.814890

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