**PROTEASE M, A NOVEL SERINE PROTEASE**

**Abstract**

Isolated nucleic acid molecules encoding a novel serine protease, Protease M, is disclosed. Protease M is downregulated in metastatic mammary epithelial tumor cells, as well as other tumor cells, and is upregulated in senescent cells. In addition to isolated nucleic acid molecules, the invention provides antisense nucleic acid molecules, recombinant expression vectors containing a nucleic acid molecule of the invention, host cells into which the expression vectors have been introduced and non-human transgenic animals in which a Protease M gene has been introduced or disrupted. The invention further provides isolated Protease M proteins, fusion proteins, antigenic peptides and anti-Protease M antibodies. Diagnostic assays, drug screening assays, and therapeutic methods utilizing compositions of the invention are also provided.