Proteases are often associated with cancer and play a role of leading enzymes responsible for tumour cell invasion and metastasis. Proteolytic activity enables proteases to influence tumour progression in many ways, including cleavage of extracellular matrix, which is necessary for invasion. This thesis deals with the study of processes by which proteases regulate tumour development, either positively or negatively, and also mentions factors influencing the activity of the proteases. In connection with invasiveness of tumour cells, a major part of the thesis is dedicated to the role of fibroblast activation protein. This serine protease is expressed in stromal fibroblasts, is able to cleave collagen and has been thus established as a therapeutic target for the treatment of carcinomas. The emphasis is also put on dipeptidyl peptidase IV, a close homologue of fibroblast activation protein, especially in relation with a selective targeting of fibroblast activation protein using the inhibitors and other therapeutic agents, whose development and use are also outlined in this thesis.