LIGA PROTI RAKOVINĚ

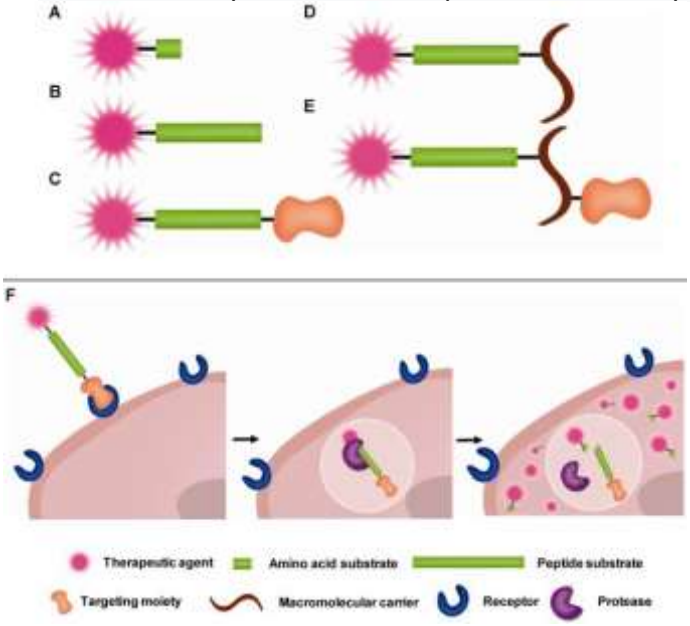
Laboratoř Metalomiky a Nanotechnologií

Vás zve na přednášku Ligy proti rakovině Praha:

Multikomponentní nanotransportér pro léčbu karcinomu plic - syntéza a charakterizace

Mgr. Zbyněk Heger

Proteases play a fundamental and essential role in many biological and pathological processes by the regulatory mechanism, proteolysis. Proteolysis is an irreversible regulatory mechanism and now known to selectively cleave specific substrates. Additionally, multimeric and multicatalytic proteases exist to degrade multiple intracellular proteins, called proteasomes, essential for biological processes [1]. The human degradome, which makes up a complete list of proteases synthesized by human cells, is made up of at least 569 proteases that are distributed into five broad classes (in order from greatest to least number): metalloproteinases, serine, cysteine, threonine, and aspartic proteases [2]. Serine, cysteine and threonine proteases are involved in covalent catalysis. The nucleophile of the catalytic site is part of the specified amino acid.



Metalloproteinases and aspartic proteases perform non-covalent catalysis and the nucleophile is an activated water molecule [3]. By their highly controlled actions, proteases play influential roles in DNA replication and transcription, cell proliferation and differentiation, angiogenesis, neurogenesis, ovulation, fertilization, wound repair, stem cell mobilization, hemostasis, blood coagulation, inflammation, immunity, senescence, necrosis and apoptosis [4]. Therefore, deregulated modifications in proteolytic actions underlie many diseases like cancer and neurodegenerative and cardiovascular disorders. Choi KY, Swierczewska M, Lee S, Chen X. Protease-Activated Drug Development. *Theranostics* 2012; 2(2):156-178. doi:10.7150/thno.4068. Available from http://www.thno.org/v02p0156.htm

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COMBINANO

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