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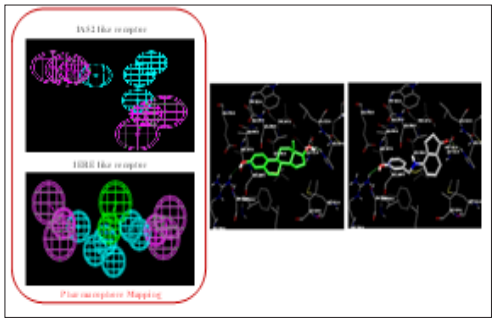
Novel drug discovery approaches for cancer metabolism



Cancer remains the second leading cause of death in the world after heart disease and cardiovascular complications. Moreover, survivors of cancer continue to suffer from symptoms of pain, fatigue and depression despite existing treatment advances for cancer treatment. Even though numerous pharmacological therapies have been developed in the past decade, the advantage of new treatment options remains important in the fight against this deadly disease. It is now well understood that protein kinases play key roles in the growth and survival of cancer cells by regulating their onset of DNA synthesis, their response to DNA damage and their entry, progression and exit from mitosis. Clinical validations prove that protein kinases are an attractive class of therapeutic drug targets for cancer as demonstrated with the recent approval of six protein kinase inhibitors. The Warburg effect describes the reliance of cancer cells on glycolysis for energy. Increased glycolysis and acid resistance have been postulated to be an essential part of carcinogenesis, conferring a significant growth advantage as well as promoting typical tumor progression. Targeting accelerated glycolysis in cancer cells is a new promising modality for treatment of cancer. Inhibition of glycolysis can be done without significant side effects and such treatment will be additive to most known cancer therapies. Recent studies show that methyl jasmonate reveals promising results for treatment of cancer. During the presentation, the role of aerobic glycolysis for tumor growth and small molecule drug discovery and development efforts as well as their therapeutic applications for oncological indications will be highlighted. The structure of this targeted compounds shall not yet be disclosed due to nature of intellectually property issues, however during the presentation some of those lead compounds will be revealed.

Recent Publications

1. Coller A H (2014) Is cancer a metabolic disease. *The American Journal of Pathology*; 184(1): 4-17.
2. Lu W, Logsdon C D and Abbruzzese J L (2013) Cancer metabolism and its therapeutic implications. *Journal of Cell Science & Therapy*; 2(2): 1-10.
3. Heiden M G V (2011) Targeting cancer metabolism: A therapeutic window opens. *Nature Reviews: Drug Discovery*; 10: 671-684.
4. Cohen S and Flescher E (2009) Methyl jasmonate: A plant stress hormone as an anti-cancer drug. *Phytochemistry*; 70: 1600-1609.
5. Pathania D, Millard M and Neamati N (2009) Opportunities in discovery and delivery of anticancer drugs targeting mitochondria and cancer cell metabolism. *Advanced Drug Delivery Reviews*; 61: 1250-127.

Biography

Mustafa Guzal has 14 years of teaching experience, 7 years at college level in chemistry/organic chemistry/medicinal chemistry courses and related laboratory courses at Clemson University, Northeastern University, and currently at Istanbul Medipol University and 6 years of chemistry teaching experience at various high schools complemented with 14 years of industrial research experience in medicinal chemistry with increased responsibilities and various positions at pharmaceutical companies including ArQule and TransTech Pharma Inc. and currently at vTv Therapeutics.

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