**Tata Institute of Fundamental Research**
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

# Internal Seminar

## Molecular targets for Cancer therapy: Focus on metabolic diseases and combination therapy

## Vimal Pandey

### UoH, Hyderabad

According to an old adage, cancer is a collection of thousand diseases masquerading into one. Significant epidemiological studies exist providing evidence for the association of metabolic disorders like diabetes and obesity with cancer. Diabetes and obesity have turned out to be an epidemic and a serious threat to the health of human population all over the globe. Additionally, these are very frequent comorbidities of cancer. Cancer cells in fact derive benefit from these deregulations in our metabolism and happily thrive on to take over the system.

During my presentation, I will present the data regarding various molecular mechanisms and pathways (associated with hyperglycaemia and obesity), as causative factors for cancers. I will also discuss the impact of these factors on the outcome of cancer chemotherapy. Using In vitro cell line models cultured in the presence of high glucose and normal glucose, we observed that hyperglycaemia on one hand provides proliferative advantage to cancer cell lines, whereas on the other hand, it renders cancer cells more susceptible to oxidative stress. This hyperglycaemia induced oxidative stress along with DNA damage has a potential to maximize the toxicity of DNA damaging drugs in cancer cells. This observation finds importance in the sense that major metabolic alteration in diabetic patients is of elevated glucose and thus supply of glucose to the cells along with the nutritional state of the patient may influence efficacy and toxicity of chemotherapeutic agents. Further, using different in vitro and in vivo models of obesity, we established a causative relationship between diet-induced obesity and melanoma progression in high fat diet induced obesity model in mice. We observed that diet induced obesity significantly altered crucial tumorigenic pathways leading to increased progression of cancers in obese mice. In the later part of my presentation, I would present some recent work wherein we have identified inhibition of cdk5 (using specific SiRNA or inhibitor, roscovitine) as an attractive combination therapy for gliomas in conjunction with the standard drug temozolomide.

***Friday, Aug 17th 2018***

***4:00 PM (Tea/Coffee at 3:30 PM)***

***Seminar Hall, TIFR-H***