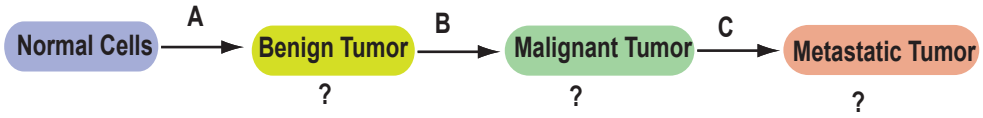
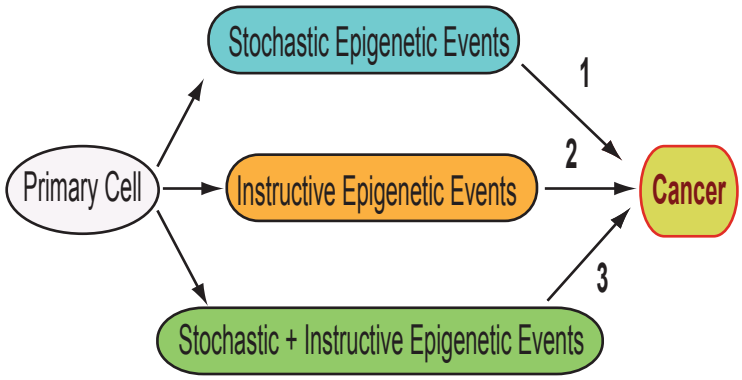
Understanding the Nature and Regulators of Epigenetic Changes that Leads to Human Cancer

A.



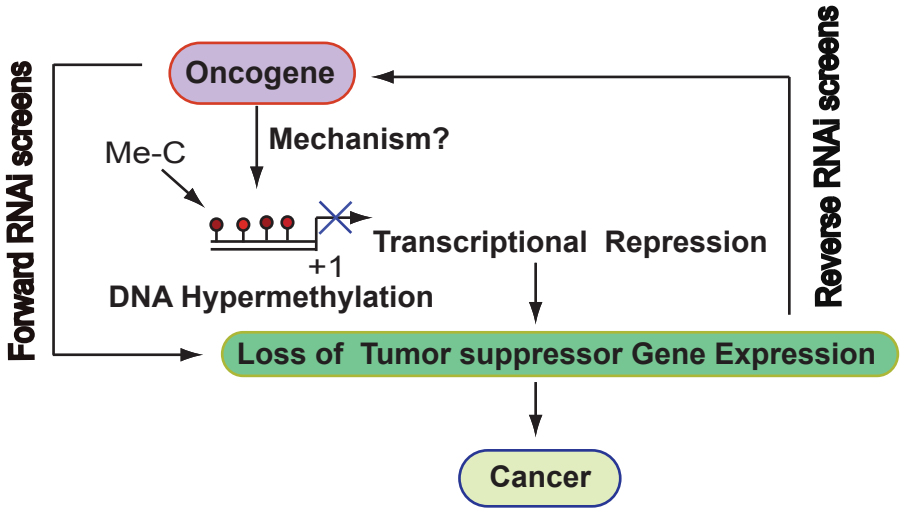
A simplistic model for cancer progression - Although, we have relatively better understanding of genetic changes and their role in human cancers, genome-wide epigenetic changes and their contribution in cancer progression still require further investigation.

B.



There are multiple ways epigentic changes may occur. According to the model 1, epigenetic changes are random. Model 2 suggest that epigenetic changes are the consequence of genetic changes, which then acts as “instructions” for epigenetic changes. Model 3, a more accommodating model proposes that epigenetic changes in human cancer are combination of random and “instructive” epigenetic events, and most likely to be true.

C.



For understanding the “instructive” epigenetic events, we have performed genome-wide RNAi screens that have identified the tumor suppressors regulated by oncogenes and reverse RNAi screen has identified the oncogenic factors that are required for epigenetic repression of a given tumor suppressor. Similar RNAi screens are now underway to identify the similarity and differences between the epigenetic regulatory mechanisms of highly diverse tumor suppressors.