

Colloquium

"The whole world has brown eyes" - Understanding epigenetics to crack cancer

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The central dogma of biology dictates that coded information in genes is what 'maketh a man'. Outside of this binary, of either having the information or not (basis of genetics), how the information is accessed by the decoding machinery actually dictates whether the writ code is used, or not. Understanding these mechanisms of occlusion of information to modulate phenotypic plasticity, lies at the heart of "epigenetics". What is unique, is that this non-DNA based mechanism is inheritable in nature, even across generations. In other words, if the decoding machinery is being influenced by the nature of our surroundings, then inevitably, it will affect not only the phenotype that we express, but also several generations that follow us. This new understanding of epigenetics and its role in diseases like cancer, Alzheimers, obesity, diabetes, to mention a few, has reopened the debate of Darwinian evolution versus Lamarckian adaptation famously known as "Nature versus nurture". I submit to you our understanding of environmental insults, that when borne early, can be coded into molecular memories that surprisingly manifest as disease, much later in life. We focus on identifying conserved epigenetic mechanisms that lead to cancer by shuttling between humans and the quite non-intuitive distant evolutionary cousin, a unicellular green algae called 'Chlamydomonas'. The secret to understanding eye colour and cancer might inevitably be one and the same.

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04:00 PM (Tea/Coffee at 03:45 PM)

Auditorium, TIFR-H (FReT-B)