

"Endogenous DNA damage in stem cells and the origin of cancer - a tale of two aldehydes"

What does the manner by which your body clears your last night's Gin and Tonic have in common with epigenetic regulation? Both processes generate highly reactive aldehydes (acetaldehyde and formaldehyde); these simple molecules can cause considerable damage and so organisms must have ways to protect against them. My talk will put forward an explanation of how this protection is achieved and what happens when it fails. The story begins with a devastating human genetic illness called Fanconi's anaemia, children with this condition have developmental defects, blood stem cell attrition and an enormous cancer risk. The basic defect in this disease is an inability to repair DNA crosslinks (these are caused when cells are exposed to chemotherapy agents such as Cis-platin). The experiments I will discuss shows that these individuals are unable to protect themselves from the two endogenously generated aldehydes, which are very likely the natural source of such DNA crosslinks. My talk should capture the interest of a wide range of investigators from basic cancer research, epigenetics, stem cell biology and DNA genome maintenance. Lastly one of the take home messages of my talk may alter the way you interact with your favourite tippie!

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