



## DNA repair pathways in normal and cancer cells

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DNA, like every other chemical, has some chemical instability. DNA bases are subject to hydrolysis, DNA oxidation and DNA methylation, resulting in damaged sites that are subject to repair by dedicated DNA repair pathways. Research on the propensity of DNA to undergo damage and on three key repair pathways has been recognized by the 2015 Nobel Prize in Chemistry, awarded to Tomas Lindahl, Paul Modrich and Aziz Sancar.

In addition to spontaneous damage, DNA damage also occurs in cancer cells. Most of this damage involves large segments of DNA in the form of chromosomal deletions and duplications. The mechanisms leading to DNA damage in cancer cells and the repair pathways used to resolve this damage are the focus of many laboratories, including our own. Here, I will describe how oncogenes, *i.e.* genes that drive cancer development, deregulate DNA replication in a way that leads to DNA damage and a repair pathway for this type of DNA damage.

Suggested Reading:

- Lindahl T. Instability and decay of the primary structure of DNA. *Nature* (1993) 362, 709-
- Macheret M., Halazonetis T.D. DNA replication stress as a hallmark of cancer. *Ann. Rev. Pathol.* (2015) 10, 425-

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**La conférence est publique**

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