

Frank Lyko

Head, Division of Epigenetics, DKFZ
Professor of Epigenetics, University of Heidelberg



Current Research

Epigenetic mechanisms like DNA methylation and histone modifications play a central role in the regulation of gene expression. However, many details about the molecular function of these mechanisms still remain to be investigated. In addition, it has become clear that aberrant DNA methylation is important for the etiology of many human cancers. This provides novel opportunities for tumor diagnosis and therapy.

We are using the fruit fly *Drosophila melanogaster* as a model system to investigate the biological function of DNA methylation. In addition, we are establishing assays and technologies for the identification and characterization of aberrant DNA methylation patterns in cancer patients. Lastly, we are designing novel DNA methyltransferase inhibitors and cooperate with pharmaceutical and clinical partners for the development of epigenetic cancer therapies.

Future Projects and Goals

A better understanding of the mechanisms mediating epigenetic gene regulation will be crucial for realizing the potential of epigenetics in cancer diagnosis and therapy. We will also continue to identify biomarkers for cancer epigenetics and develop novel inhibitors of DNA methyltransferases and other epigenetic modifier proteins.

Selected Publications

Jeltsch, A., Nellen, W., and Lyko, F. (2006). Two substrates are better than one: dual specificities for Dnmt2 methyltransferases. *Trends Biochem. Sci.* 31, 306-308.

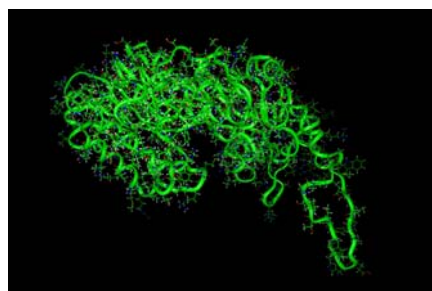
Brueckner, B., and Lyko, F. (2004). DNA methyltransferase inhibitors: Old and new drugs for an epigenetic cancer therapy. *Trends Pharmacol. Sci.* 25, 551-554.

Lyko, F. (2001). DNA methylation learns to fly. *Trends Genet.* 17, 169-172.

Contact:

Prof. Dr. Frank Lyko
Deutsches Krebsforschungszentrum
Im Neuenheimer Feld 580
69120 Heidelberg

f.lyko@dkfz.de
www.dkfz.de/epigenetics



Three-dimensional structure of the catalytic domain of the human DNA methyltransferase 1 enzyme