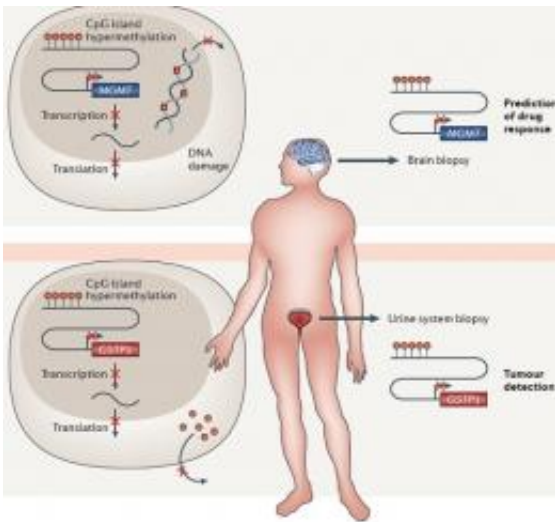


# Epigenetics emerges powerfully as a clinical tool

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GSTP1 and MGMT: These are case examples for epigenetic profiling in diagnosis and prognosis.

A study coordinated by Manel Esteller, published in *Nature Reviews Genetics*, highlights the success of this area of research to predict the behavior and weaknesses of tumors.

The research team led by Manel Esteller, director of the Cancer Epigenetics and Biology Program at the Bellvitge Biomedical Research Institute (IDIBELL), professor of genetics at the University of Barcelona and ICREA researcher, has updated the latest findings in applied epigenetics in a review paper published in *Nature Reviews Genetics*.

There is a growing need for better biomarkers that allow early detection of human diseases, especially cancer. The markers can improve primary prevention, diagnosis and prognosis of disease. Furthermore, it is possible to predict which may be more effective treatment according to patient characteristics, which is known by the name of personalized medicine.

Genetic tests complementary to traditional methods have been used to improve the approach to various diseases, but in the last ten years Epigenetics has hardly emerged to help solve these clinical situations, as highlighted by the article. Epigenetics is the discipline for the study of the [chemical changes](#) in our genetic material and the same [regulatory proteins](#). The most known epigenetic mark is the addition of a [methyl group](#) to the DNA.

The study notes that the last decade two tests based on the methylation of two genes, MGMT and GSTP1, have been proved vital in predicting [brain tumours](#) sensitive to the temozolomide drug and in distinguishing prostate cancer compared benign growth, respectively. Dr. Esteller points out that "the most exciting thing is that they are currently being identified new epigenetic [biomarkers](#) for predicting the performance and weaknesses of tumours at a fast pace." In this sense, the coordinator of the study cites the recent identification of epigenetic alterations in predictive genes as response to new generation drugs in leukaemia and the fact that obtaining a "picture" of the DNA methylation pattern can expose unknown tumours that previously had a very poor prognosis.

**More information:** Heyn H, Esteller M. DNA methylation profiling in the clinic: applications and challenges. *Nature Reviews Genetics*, September 4, 2012.

Provided by IDIBELL-Bellvitge Biomedical Research Institute

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