

ENVIRONMENTAL EPIGENETICS



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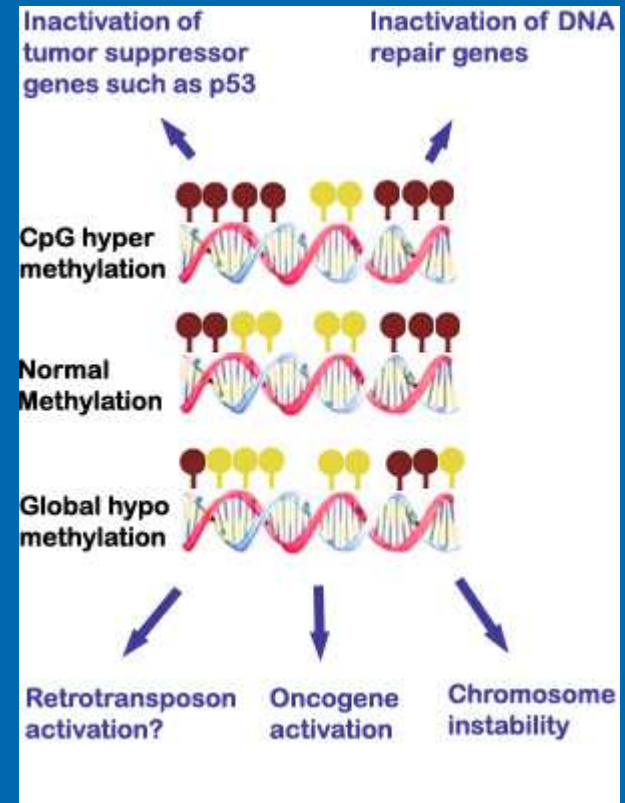
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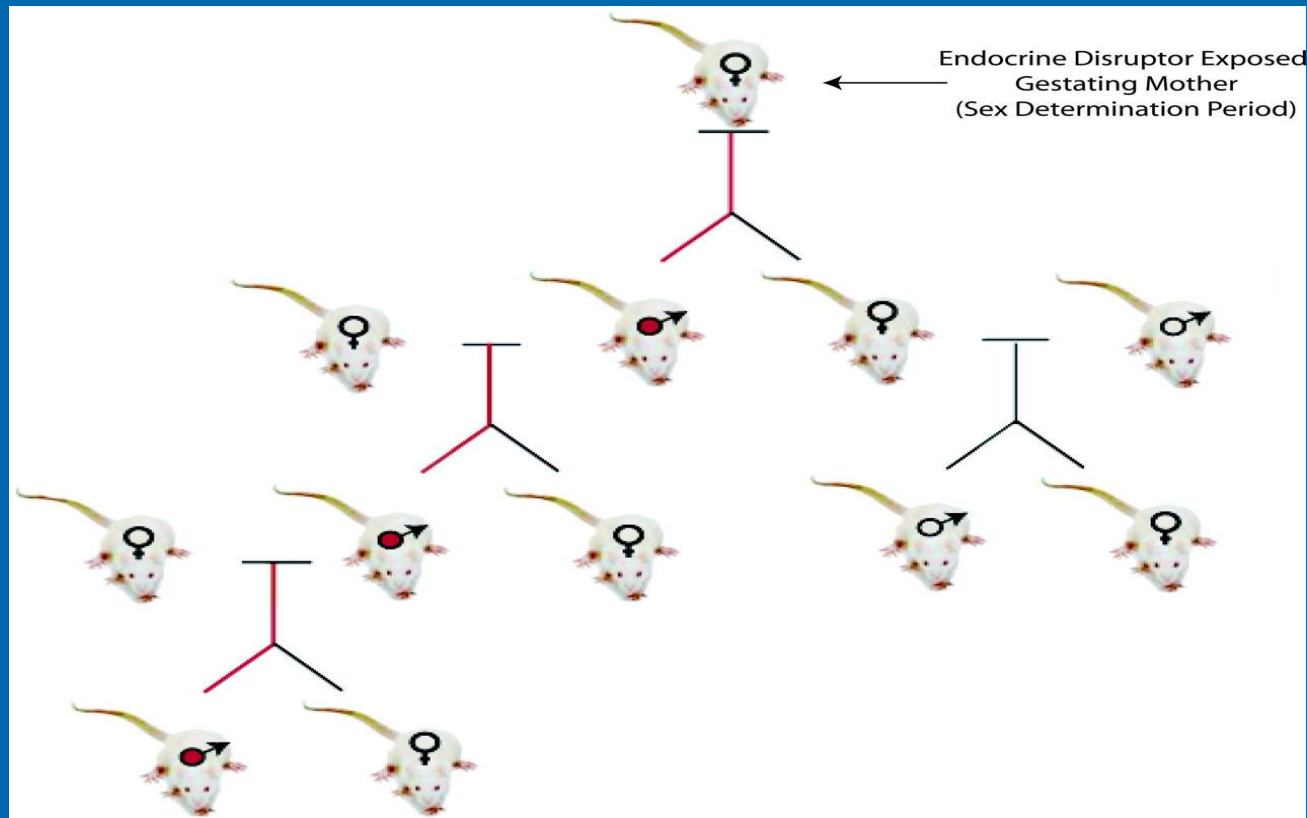
Are we born with our genetic destiny or can it be changed?
Agouti mice-- epigenetic changes across generations

(Waterland and Jirtle, Mol.Cell.Biol.23:5293-5300, 2003) (Env.Health Perspect 2006 April,114(4) 567-572)

Nutritional genomics vs. toxicogenomics



Epigenetics :DNA methylation and histone modification



ENDOCRINE DISRUPTORS

Vinclozalin, methoxychlor

Plastics(phthalates),pesticides

Reik,W et.al.2001Epigenetic reprogramming in mammalian development. Science 293:1089-1093

Dolinoy et.al. Proc Natl. Acad Sci 104:13056-13061,2007

Inherited Breast / Ovarian Cancer

BRCA1 or 2 Mutation

Future of Predictive Genomics

Women have an 82% lifetime risk of breast or ovarian cancer

Risk has increased since 1940



Risk of breast cancer 24% if born before 1940 but 67% if born after 1940

Risk of ovarian cancer was twice as high for BRCA1 carriers and 23% higher for BRCA2 carriers if born after 1940