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Cancer epigenetic and its applications in cancer screening, risk assessment and treatment

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Abstract

Epigenetics involves alterations in gene expression without changing the nucleotide sequence. Nutrients influence epigenetic regulation in observational, experimental, and clinical studies in different diseases. After characterization of epigenetic components in cancer, genes and pathways are being characterized in other diseases such as diabetes, obesity, neurological disorders. Nutrients such as folic acid which supply methyl group have been shown to have protective effect in colon cancer. Since some epigenetic changes can be reversed chemically, epigenetics has tremendous disease intervention and treatment implications. After completion of the ongoing human epigenome roadmap project and validation of key observation studies in nutrition epigenetics, strategies can be developed for disease control and treatment. Epigenetics involves alterations in gene expression without changing the nucleotide sequence. Nutrients influence epigenetic regulation in observational, experimental, and clinical studies in different diseases. After characterization of epigenetic components in cancer, genes and pathways are being characterized in other diseases such as diabetes, obesity, neurological disorders. Nutrients such as folic acid which supply methyl group have been shown to have protective effect in colon cancer. Since some epigenetic changes can be reversed chemically, epigenetics has tremendous disease intervention and treatment implications. After completion of the ongoing human epigenome roadmap project and validation of key observation studies in nutrition epigenetics, strategies can be developed for disease control and treatment. The National Institutes of Health (NIH) has initiated the Epigenomics Roadmap Program (http://www.roadmapepigenomics.org/). Updates from this program will be presented.

Biography

Mukesh Verma is a Program Director and Chief in the Methods and Technologies Branch (MTB), Epidemiology and Genetics Research Program (EGRP) of the Division of Cancer Control and Population Sciences (DCCPS) at the National Cancer Institute (NCI), National Institutes of Health (NIH). Before coming to the DCCPS, he was a Program Director in the Division of Cancer Prevention (DCP), NCI, providing direction in the areas of biomarkers, early detection, risk assessment and prevention of cancer, and cancers associated with infectious agents. He holds a M.Sc. from Pantnagar University and a Ph.D. from Banaras Hindu University. He did postdoctoral research at George Washington University and was a faculty member at Georgetown University. He has published 126 research articles and reviews and edited three books in cancer epigenetics and epidemiology field.

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