

Letter to the Editor:

Epigenetics, Nutrition, and Cancer

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Your issue on nutrition for supporting health highlighted the importance of both continuing research and action implementing change based on research findings.

Hollinger et al discuss nutrition as being a modifiable variable for influencing cancer risk and that this involves multiple molecular mechanisms.¹ Among the mechanisms they point out the role of antioxidants phytochemicals in counteracting DNA damage. As a cell proceeds along the pathway of becoming cancerous, there can be multiple changes in its gene expression – changes that may be influenced by environmental factors such as diet – that involve not only genetic mutations to the DNA but also changes to the epigenome.²⁻⁶

In explaining the epigenome to the public, I have utilized a “cookbook” model of the genome since I have come to believe that the old blueprint analogy of the genome gives the impression of a very static, set outcome.⁷ In the cookbook model, the genome is analogous to a cookbook and epigenetic markers are analogous to sticky notes telling the chef how many servings of which recipes to cook-up and when. Just as sticky notes can be adjusted and swapped out from time to time without altering the text of the cookbook, the epigenome can be somewhat malleable and influenced by environmental factors. One class of these factors, that has been gaining the attention of researchers, is nutrition.²⁻⁶ There are indications that malnutrition may contribute on an epigenetic level to increased risk of cancer while good nutrition may have protective effects on the epigenome. Further research needs to be done on this topic, which could inform future public health programs.

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