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When Does Breast Cancer Begin?

When does the first cancer cell arise in breast tissue? How long before a lump can be felt has a tumor been growing? When does cancer begin?

No one has a definitive answer to these questions. However, a recent study published in the journal *Clinical Epigenetics* shines some light on the question. But first, a bit of background.

Methylation is a process whereby little chemical groups called methyl groups get sprinkled on the DNA. With methyl groups in place, genes are regulated. When there are not enough methyl groups around, the DNA can be lacking in methyl groups. This can lead to genes becoming unregulated. And if those unregulated genes promote cell division, it can lead to cancer.

This latest article found that women diagnosed with breast cancer have low methylation (compared to women who don't get cancer) as many as 12 years prior to their diagnosis!

What's the big deal here? Often cancer is talked about in terms of genetic mutations that "cause" it or that drive it. Methylation, though, is involved with epigenetic regulation, meaning that it regulates the genes from outside. Most importantly, epigenetics are factors that are influenced very strongly by diet, exercise, exposures and even stress. In short, epigenetics are factors that we can directly influence.

No one can say when the cancer cell that will develop into a tumor first appears. We can now say, though, that the conditions for that cell to appear can be in place up to 12 years before the cancer is diagnosed. The take home message is that our choices about diet and lifestyle today are setting the stage for our health far, far into the future.

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