

## It runs in the family: Genetics and cancer

**C**ancer is possibly the most menacing word in the English language. No person wants to be diagnosed with it, no one wants a loved one to be diagnosed with it, and no company wants its valued family of employees or consumers to be diagnosed with it, regardless of the cause. In the world of litigation, cancer comes with allegations of blame. An individual (or her surviving heirs) may search for a cause for her cancer and not only be influenced but also potentially misled by the internet, television, attorneys, or mere rumor that there is but one or a short list of causes for the cancer. Consequently, the individual or family members conclude, often based on faulty information, that someone is to blame. Often, what follows is a lawsuit alleging that exposure to a given substance caused an individual's cancer via personal use of a product; general premises based exposure to a chemical, fiber, or other agent; or exposure to a product as a bystander or second-hand exposure from a friend or family member. In this world of mass communication, and sometimes mass-misinformation, it is prudent to remember the line we have all heard "it runs in the family." This is not just an old saying that our grandparents and great grandparents utilized to explain a unique situation, but as we continue to learn... is often fact.

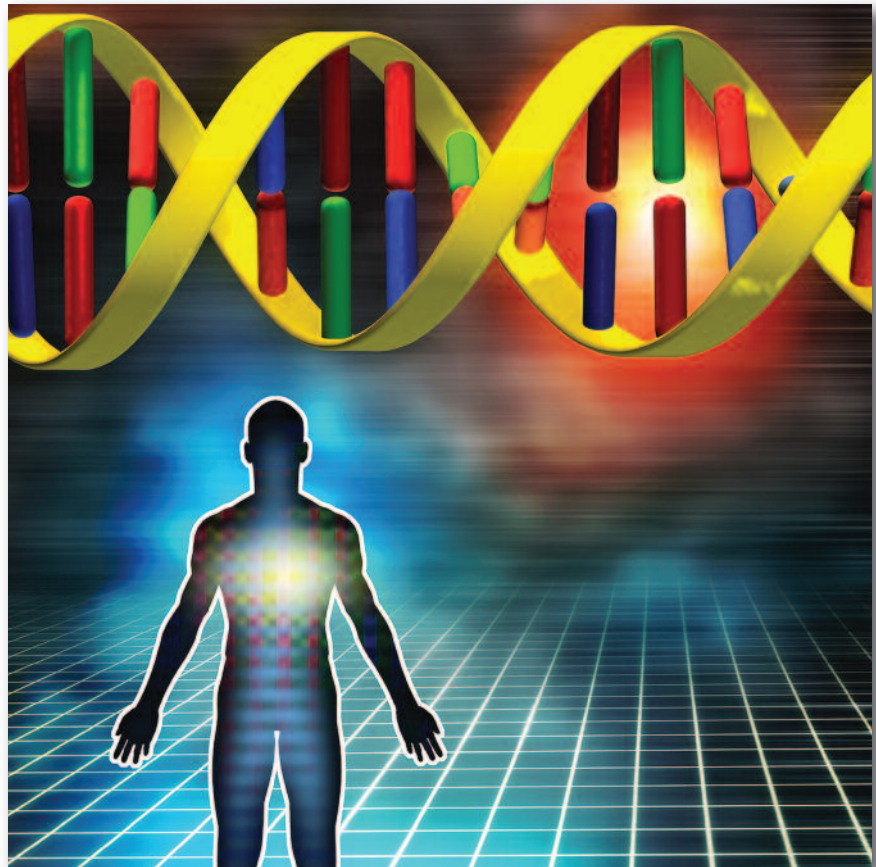
The fact is cancer development is a complicated process. While exposure to certain carcinogens may increase an individual's risk for a certain type of cancer, "the dose makes the poison." If faced with a lawsuit alleging that low-level exposure to a particular carcinogen was

the cause of someone's cancer, check out the family history. It may even be prudent to look into simple genetic testing of the individual. The results may truly reveal just what "runs in the family."

The phrase "it runs in the family" is a simple way to say that a family has a particular predisposition to genetic errors that may lead to a particular cancer. Basically, cancer is uncontrolled cell growth. The genes we get from our direct blood relatives may place us at risk for the development of cancer. There are two main types of genes that relate

to cancer oncogenes and tumor suppressor genes. An oncogene can promote out-of-control cell growth and lead to cancer. Tumor suppressor genes are genes that, if working correctly, slow down cell division, repair DNA errors, or tell a cell when to die in its natural course. When a tumor suppressor gene fails to work properly, cells may grow out of control and lead to cancer. Inherited genetic mutations and errors may make someone more susceptible to genetic errors causing the develop-

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ment of oncogenes and the malfunction of tumor suppressor genes.

Medicine may not be curing cancer as fast as technology seems to be changing our phones, but make no mistake medical professionals are learning more about cancer, the genetics of cancer, and how to treat cancer every day. Scientists have recently discovered, for instance, that mutations of the tumor suppressor genes called BRCA1 and BRCA2 may have harmful mutations that can be inherited, greatly increasing the risk of developing breast and/or ovarian cancer. Similarly, recent studies have determined that an inherited mutation of the BAP1 tumor suppressor gene may predispose individuals to uveal melanoma, lung cancer, meningioma, and malignant mesothelioma.

Genetic testing may be of great use in defending causation claims by plaintiffs in litigation. More importantly, identifying and understanding the nature and implications of genetic errors associated with oncogenes and tumor suppressor genes may help scientists not only to identify persons at risk for a given cancer, but also lead to further advances in the treatment and cure of certain cancers. ■

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# THE ILLINOIS Manufacturer

*The Illinois Manufacturer* is the official publication of the Illinois Manufacturers' Association (IMA)

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