

SOURCES OF GENETIC MUTATIONS

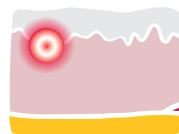
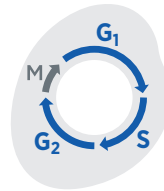
Cancer initiation and progression are predominantly caused by the accumulation of changes, or mutations, in the genetic material of a cell over time. The primary sources of genetic mutations are as follows:

About 10 percent of all new U.S. cancer cases are linked to inherited or de novo genetic mutations, which are present in each cell of the body from birth (33)(34).



Most mutations, however, are acquired during a person's lifetime.

- Some occur during cell multiplication, and the number of times a cell multiplies increases the chance it will acquire a mutation.
- Some occur because of persistent exposure to substances that damage genetic material, such as toxicants in tobacco smoke and ultraviolet radiation from the sun, (see **Figure 2**, p 25).
- Others occur as a result of chronic inflammation fueled by medical conditions such as Crohn's disease (35).



These factors come together to determine the chance that an individual cell has of acquiring mutations over time, which, in turn, determines the overall risk that a person will develop cancer. It is important to note that not all mutations lead to cancer.

Adapted from (36)