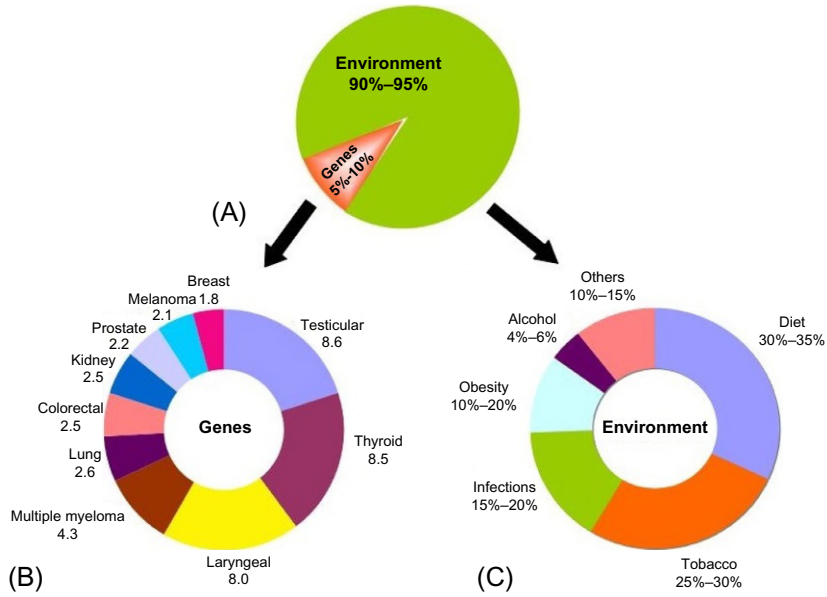

FIG. 10.2 The role of genes and environment in the development of cancer (Anand et al., 2008).

Particular substances have been linked to specific types of cancer. Tobacco smoking is associated with many forms of cancer as it contains other known carcinogens, including nitrosamines and polycyclic aromatic hydrocarbons, and is estimated to cause 90% of all lung cancers (Anon., n.d.-h). Similarly, prolonged exposure to asbestos fibers is associated with mesothelioma (Anon., n.d.-h).

(2) Radiation

Over 10% of malignant cancers are caused by radiation exposure, including both ionizing radiation and nonionizing ultraviolet radiation. Radiations due to radon gas and prolonged exposure to ultraviolet radiation from the sun can lead to melanoma and other skin malignancies (Parsa, 2012). Radiation therapy given for one type of cancer may also cause another type of cancer. For example, those who receive chest radiation therapy for lymphomas may later develop breast cancer (Parsa, 2012).

(3) Viral and bacterial infections

Some cancers can be caused by infections with pathogens (Hattori and Ushijima, 2016). Notable among these include liver cancers due to Hepatitis B and C infections, cervical cancer due to infections with Human Papilloma virus (HPV), Epstein Barr virus causing Burkitt's lymphoma, and gastric or stomach cancer due to Helicobacter pylori infection (Hattori and Ushijima, 2016).

(4) Heredity

Even though the vast majority of cancers are nonhereditary, hereditary cancers are primarily caused by an inherited genetic defect. <0.3% of the population is carriers of a genetic mutation that has a large effect on cancer risk and