12.3

Cancer

Control of cell growth is one of the most important functions for cells to regulate, but despite all the levels of control, errors can still occur, and those errors can result in uncontrolled cell growth, a condition called cancer. A major checkpoint occurs during replication of DNA during the S phase. Still, some errors can be passed on to daughter cells and depending on the type of error, it can result in a gene mutation. These mutations can be passed over and over with each replication, often amplifying the mistake. Mistakes associated with cell cycle control and repair mechanisms can result in uncontrolled cell growth and a tumor. Tumors can be classified as **benign**, **malignant**, or **metastatic** tumors. Benign tumors represent large masses of cells but seem to be somewhat under control of inhibiting factors and stay localized to their tissue type. A benign tumor is not considered cancerous. Malignant tumors start to invade surrounding tissue and since they lose the ability to be regulated, they also lose normal functioning capabilities. Metastatic tumors are like malignant tumors in that they no longer listen to control factors, but they also detach from their sites of origin and can travel to anywhere in the body and start a “new” tumor growth.