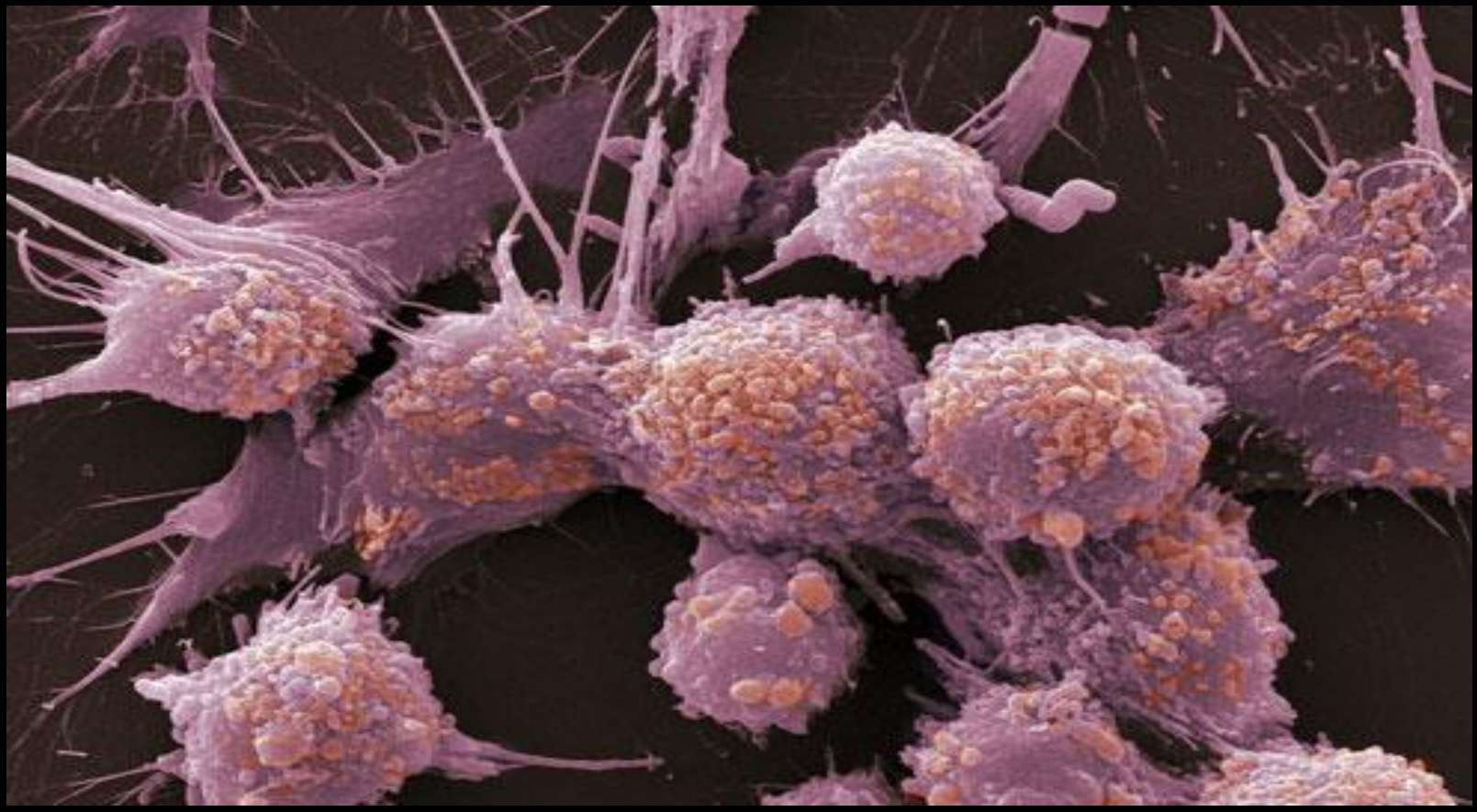
Regulation of the Cell Cycle



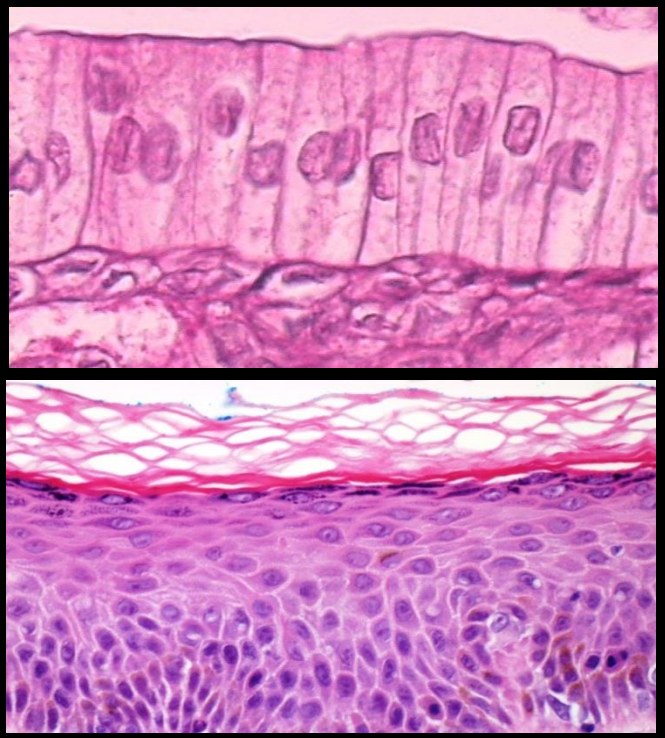
Learning Objectives

- Describe how the cell cycle is regulated

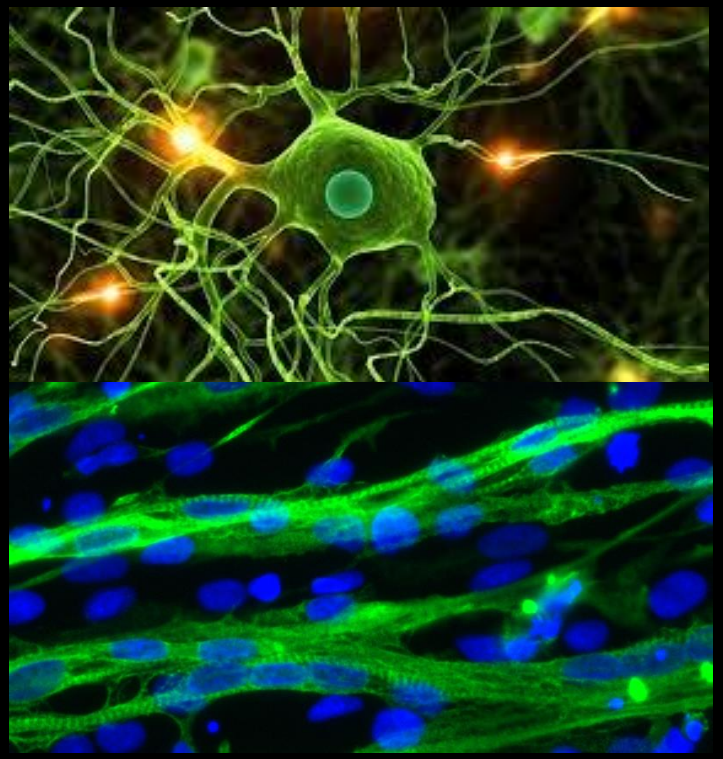
- Explain how cancer cells are different from normal cells

Regulating the Cell Cycle

Not all cells move through the cell cycle at the same rate.



Cells of the skin and digestive tract divide rapidly.



Adult muscle and nerve cells do not divide.

How is the cell cycle regulated?

Internal Regulators:

Proteins that respond to events inside the cell. Ex. Cyclin

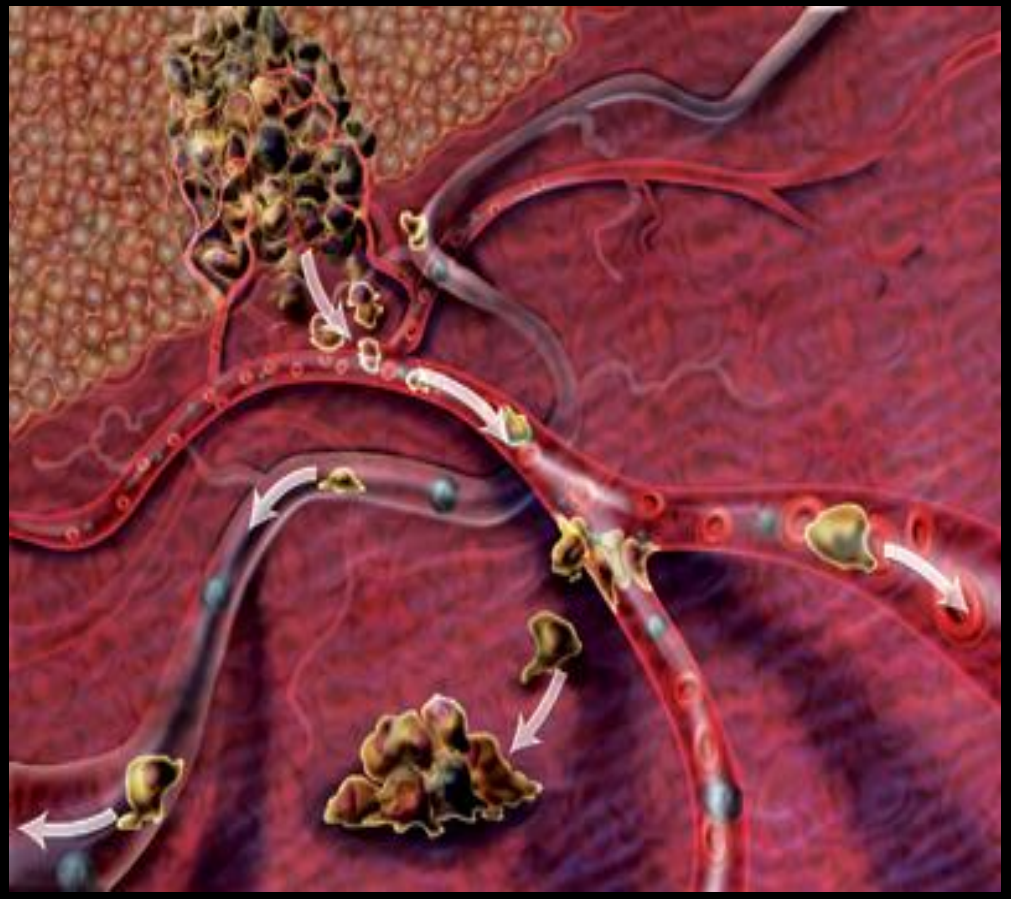
External Regulators:

Proteins that respond to events outside the cell. Ex. Growth Factors

Uncontrolled Cell Growth

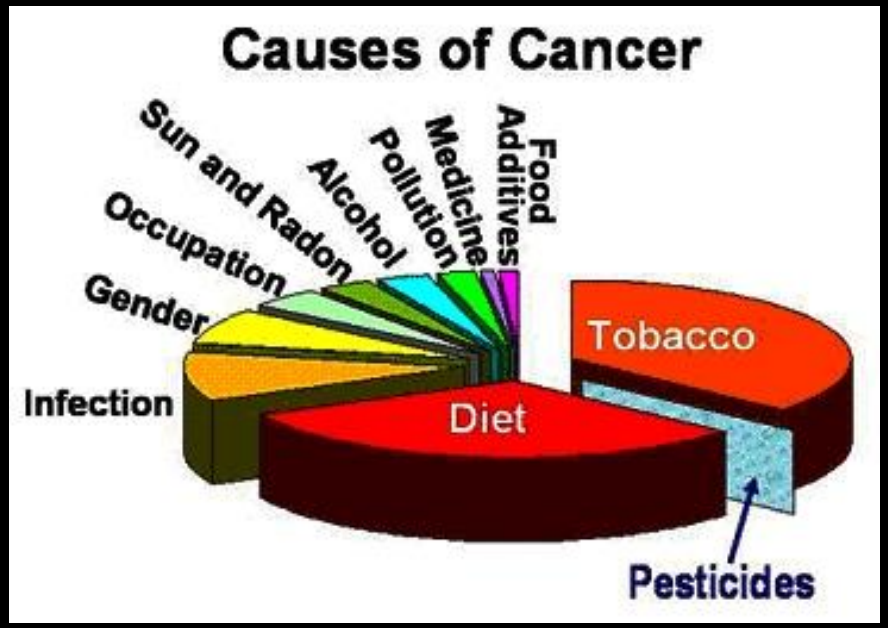
Cancer - a disorder in which some of the body's own cells lose the ability to control growth.

Characteristics of Cancer



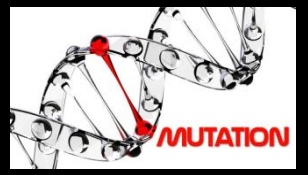
- Divide uncontrollably
- Form masses called tumors
- Damage surrounding tissue
- Break loose from tumors and spread throughout the body - Metastasis

Causes of Cancer



Genetics/Heredity:

Mutated Genes



Environmental Factors:

Smoking/Tobacco

Carcinogens

Sun/UV

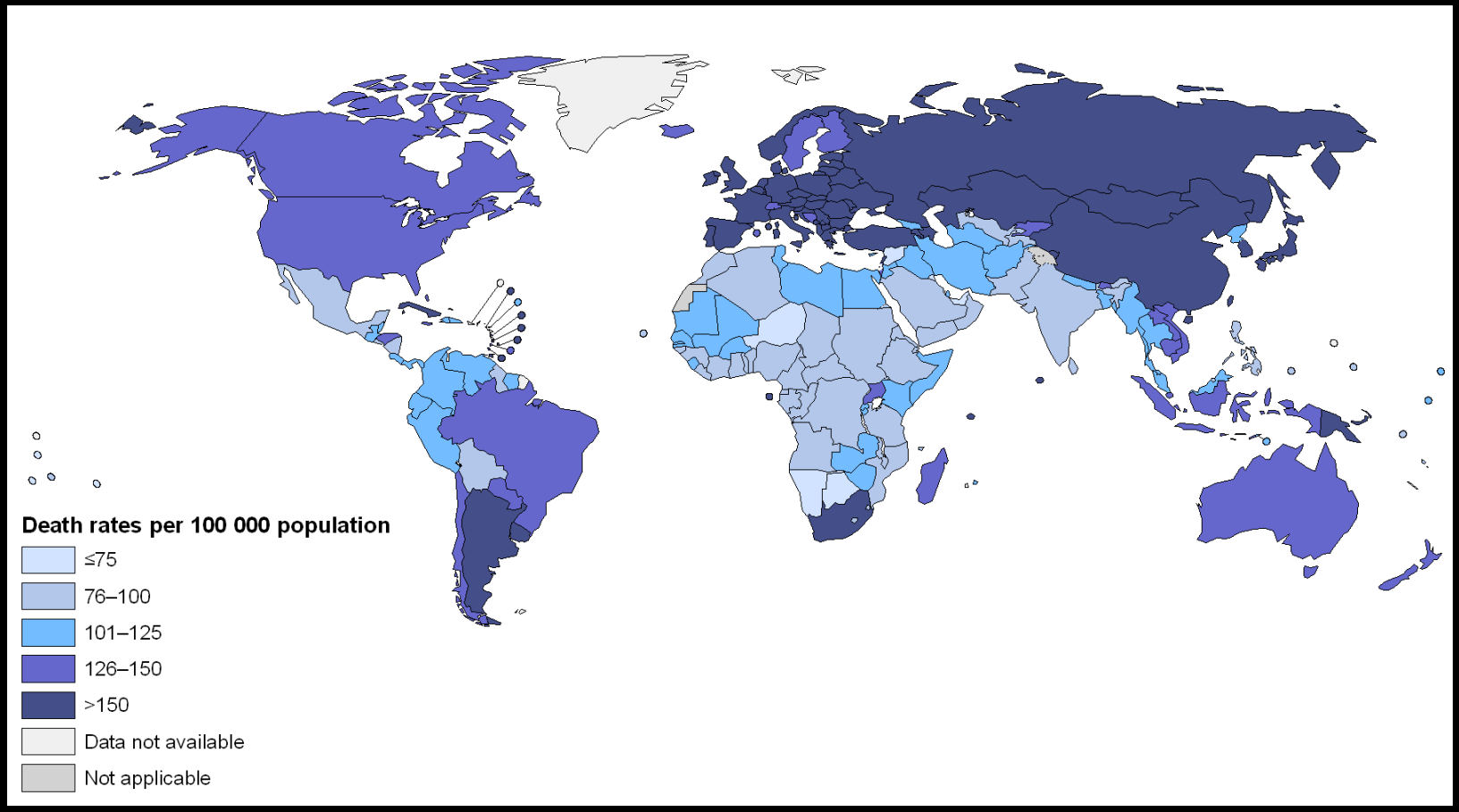
Radiation

Diet/Physical Activity

Treatments for Cancer

Surgery
Radiation therapy
Chemotherapy

Cancer Facts and Figures



- Cancer is a leading cause of death worldwide.
- Deaths caused by cancer this year: 7,602,215

YouTube Video

Cell Cycle and Cancer
Amoeba Sisters

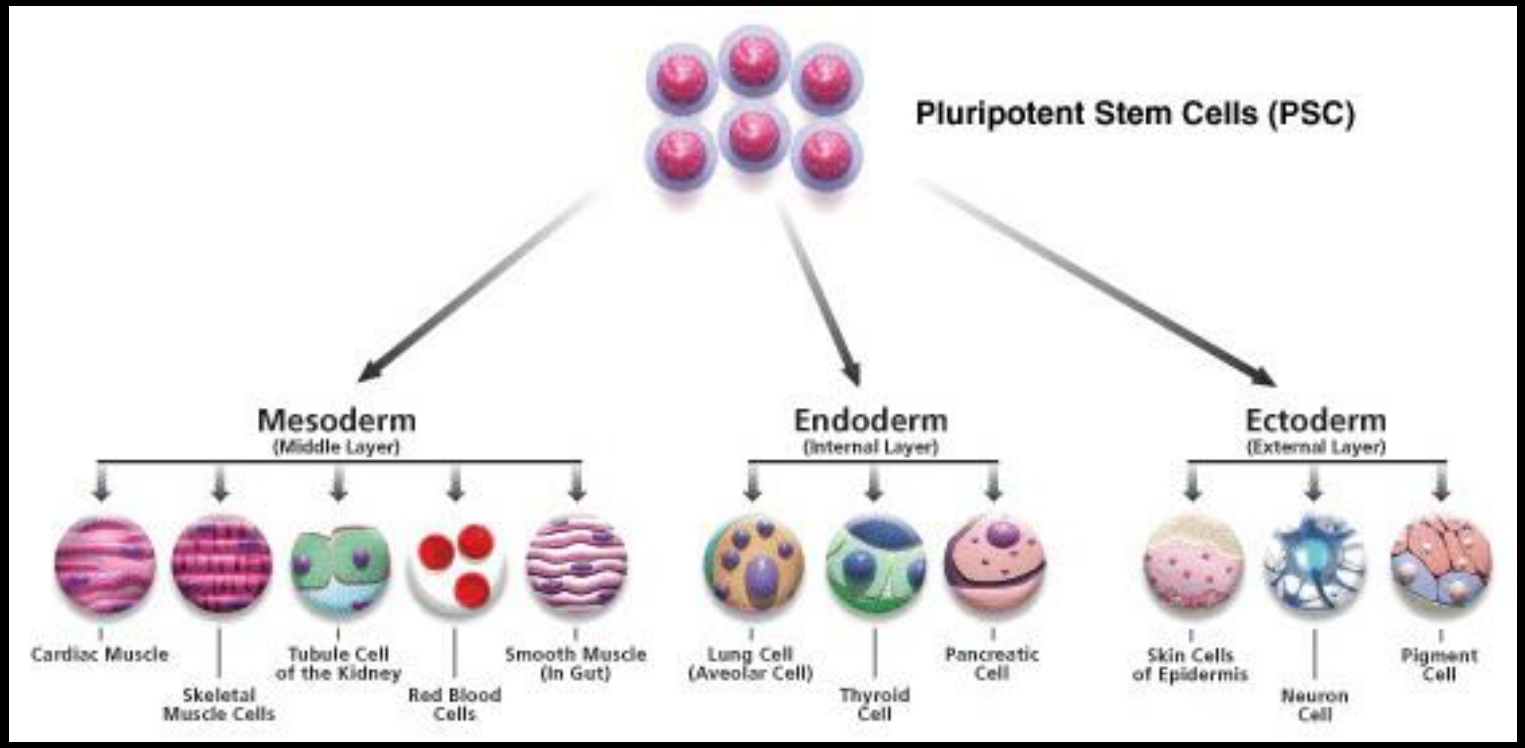
YouTube Video

Cancer: Unregulated Cell Division

Stop Here

Stem Cells

Stem cells - unspecialized cells that have the potential to become a variety of cell types.



Every cell in an organism was produced by mitosis from stem cells.