

## Radiation Biology, Effects of Ionizing Radiation

1. What is the study of the action of radiation on living matter called?
  - a. Diagnostic biology
  - b. Genetic biology
  - c. Radiobiology
  - d. Cellular biology
2. What contains the genetic information of the cell?
  - a. DNA
  - b. Molecules
  - c. Nucleotides
  - d. Cytosine
3. What is the primary cause of cell death induced by radiation?
  - a. Free radicals
  - b. DNA damage
  - c. Low linear energy transfer
  - d. Radiosensitivity
4. Which of the following are DNA repair mechanisms?
  - a. Excision repair
  - b. Mismatch repair
  - c. Nucleotide excision repair
  - d. All the above
5. What is found in the nucleus of the cell?
  - a. Molecules
  - b. Chromosomes
  - c. Protein
  - d. Water
6. Measuring the radiosensitivity of a cell is the ability of the cell to undergo more than 5 or 6 cell division and produce a viable colony containing at least \_\_\_\_\_ cells.
  - a. 20
  - b. 30
  - c. 40
  - d. 50
7. True or false. Cells are regarded as having been “killed” by radiation if they have lost reproductive integrity.
  - a. True
  - b. False
8. Which of the following **is not** a phase in the development of cancer in tissue?
  - a. Hypoblastic phase
  - b. Neoplastic initiation phase
  - c. Promotion phase
  - d. Conversion phase
9. After irradiation, Leukemia has a minimum latency period of about \_\_\_\_\_ years.
  - a. 2
  - b. 3
  - c. 4
  - d. 5

10. The International Commission of Radiological Protection (ICRP) recommendations for radiation protection purposes are based on the \_\_\_\_\_ study and other epidemiological studies.
  - a. German
  - b. Australian
  - c. Japanese
  - d. Italian
11. Tissues and organs in the human body are composed of many different \_\_\_\_\_.
  - a. Molecules
  - b. Cells
  - c. Nuclei
  - d. Atoms
12. The detailed knowledge about radiation-induced normal tissue effects comes primarily from which of the following?
  - a. Experience with patients receiving radiotherapy
  - b. Radiation accidents
  - c. Laboratory studies
  - d. All the above
13. Acute radiation response may manifest clinical symptoms with a few \_\_\_\_\_ of radiation exposure.
  - a. Minutes
  - b. Hours
  - c. Days
  - d. Weeks
14. The epidermis of the skin renews rapidly within \_\_\_\_\_ days.
  - a. 3-5
  - b. 10-12
  - c. 15-30
  - d. 45-60
15. Transient erythema or skin reddening occurs after a single dose greater than \_\_\_\_\_.
  - a. 2 Gy
  - b. 3 Gy
  - c. 5 Gy
  - d. 6 Gy
16. What is the incident rate to develop cataracts for individuals exposed to a single dose of 2Gy or higher?
  - a. 85%
  - b. 90%
  - c. 95%
  - d. 100%