

Onboarding Q&A 5/5

1. What is cancer?

- a. A skin disease
- b. A heart condition
- c. Pathological mitosis**

2. What are driver mutations?

- a. Mutations that progress pathological mitosis forward**
- b. Mutations in tumor suppressor genes or oncogenes
- c. Mutations in acrocentric chromosomes

3. What is the two hit hypothesis?

- a. Describes the possible onset of cancer, both TS and Oncogenes must be mutated
- b. Describes the need for both alleles of a tumor suppressor gene to be mutated in order for cancer to be assumed**
- c. Hypothesis that states that cancer kills both affected cells and non-affected neighboring cells, hence two hits

4. Which theory of cancer origin is widely supported today?

- a. Proto-oncogenic theory**
- b. Somatic theory
- c. Oncoviral theory

5. Which two classes of genes are responsible for the onset of oncogenesis?

- a. Oncogenes**
- b. Telomers
- c. Tumor Suppressors or TSs**

6. How many hallmarks of cancer are there?

- a. 2
- b. 4
- c. 5**

7. What are the five hallmarks or "drivers" of cancer?

- a. Rapid mitosis of cells**

- b. Rapid meiosis of cells
- c. Defective stop mechanism for mitosis**
- d. Cellular mobility**
- e. Angiogenesis (signaling blood vessels to extend towards them)**
- f. Immortality (constantly elongated telomeres)**

8. What is a mutagen?

- a. Any substance or physical effect that can cause a ray of light to bend
- b. Any substance or physical effect that can cause a mutation in DNA**
- c. A sports drink

9. Which tissue type is most exposed to mutagens?

- a. Neural
- b. Skeletal
- c. Epithelial**

10. If both alleles of a tumor suppressor gene are mutated/blocked, what happens?

- a. Cellular division cannot be quartered and physically maintained. Tumorigenesis.**
- b. Lung failure.
- c. The cell becomes cancerous.

11. What is the difference between an adenoma and a carcinoma?

- a. An adenoma is typically malignant while a carcinoma is benign.
- b. A carcinoma is typically malignant while an adenoma is benign.**
- c. Both are tumors.

12. Explain what is a signaling cascade or a signaling pathway.

a. Signal transduction from outside the cell, that leads to a pathway of protein activations eventually leading to mitosis.

b. The communication method used by cells for intercellular communication

c. The communication method used by cells for intracellular communication

Not sure about the answer.

Communications between cells triggers intracellular signaling cascades, termed signal transduction pathways, that regulate specific cellular functions. Each signal transduction occurs with a primary extracellular messenger that binds to a transmembrane or nuclear receptor, initiating

intracellular signals. The complex formed produces or releases second messengers that integrate and adapt the signal, amplifying it, by activating molecular targets, which in turn trigger effectors that will lead to the desired cellular response.

13. (Primary) Tumor heterogeneity is the same as clonal heterogeneity?

a. True

b. False

14. Remission means that the tumor has subsided.

a. True

b. False

15. Relapse means that the tumor has subsided.

a. True

b. False

16. The father of chemotherapy is _____.

a. Robert Brown

b. John Browning

c. Sydney Farber

17. Viruses can also cause cancer.

a. True

b. False

18. Primary tumor means _____.

a. The origin of the tumor initially prior to any metastasis

b. The largest tumor in a cancer patient

c. The core set of tumor cells found at the center of a tumor

19. What is an example of a liquid tumor?

a. Rous Sarcoma

b. Small Cell Lung Cancer

c. Acute Myeloid Leukemia

20. Which types of genomic variants are very present in tumors?

a. SNPs

b. Translocations

c. CNVs

21. An example of a gene fusion is the Philadelphia chromosome.

a. True

b. False

22. What were the first two therapeutic methods for fighting cancer?

a. Chemotherapy

b. Surgery

c. Radiotherapy

23. What are the differences between primary and secondary prevention?

a. Primary prevention means keeping away from mutagens, secondary prevention means regular screening for any possible sign of tumor

b. Primary prevention relates to the medication and diet one should hold to prevent tumors and secondary prevention means to prevent a tumor from becoming cancerous

c. Primary prevention is based on hormonal medication while secondary prevention is based on surgery

24. An example of secondary prevention is _____.

a. Don't smoke

b. Reduce sugar intake

c. Mammogram

25. An example of primary prevention is _____.

a. Don't smoke

b. Mammogram

c. PAP smear

26. There are two types of breast cancers. Which are they?

a. ER + and ER ++

b. ER + and ER -

c. ER + and ER +-

27. Kinase inhibitors are a type of _____.

a. Chemotherapy

b. Signaling pathway blockers

c. Anoikis inducers

28. Monoclonal Antibodies do what?

a. Target healthy cells for destruction

b. Target cancer cells for destruction by the immune system

c. Target both cancer cells and healthy cells for destruction by the immune system

29. Personalized medicine relies on genomic profiling of cancer patients.

a. True

b. False

30. One of the biggest problems in personalized medicine is _____ .

a. Tumor relapse rate

b. Tumor clonal heterogeneity

c. Tumor remission rate