Clinical and Experimental Radiobiology Course

Tutorial 1

Wi-Fi

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Piazza

https://piazza.com/utoronto.ca/winter2025/**mbp1301h**

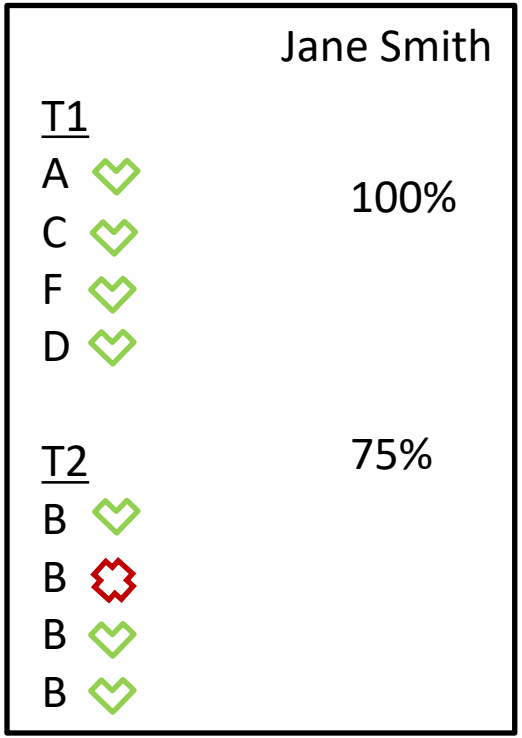
Radiation Oncology
UNIVERSITY OF TORONTO

Temerty Medicine

Tutorial 1

- **Lecture 2: Hallmarks of Cancer**
  - ***Dr. Marianne Koritzinsky***
- **Lecture 3: Molecular Basis of Cell Death**
  - ***Dr. Marianne Koritzinsky***
- **Lecture 4: Radiation Induced Damage & DNA Damage Response**
  - ***Dr. Shane Harding***

Tutorials: If you want CPD credits:



End of course: scan/photo and send to radiation.oncology@utoronto.ca

Lecture 2: Hallmarks

A genetic alteration is considered "driving" if…

A. It occurs frequently in tumors

B. It is somatic

C. It represents loss of function of a tumor suppressor

D. All of the above

E. None of the above

Reference: L2 slide 8

Lecture 2: Hallmarks

A cancer cell typically contains approximately this number of driving mutations:

A. 1

B. 5

C. 100

D. 1000

Lecture 2: Hallmarks

Genetic alterations in cancer can influence tumor radiation response by:

A. **Disrupting DNA repair**

B. **Promoting high proliferation**

C. **Promoting hypoxia adaption**

D. **All of the above**

Lecture 3: Cell Death

What is the most common cause of cell death following irradiation?

A. Apoptosis

B. Autophagy

C. Senescence

D. Mitotic catastrophe

E. Necrosis

Lecture 3: Cell Death

Following radiation exposure, a surviving cell that has retained reproductive integrity is said to be:

A. **Radioresistant**

B. **Genomically unstable**

C. **Very lucky**

D. **Clonogenic**

Lecture 3: Cell Death

Apoptosis is likely to influence clonogenic survival when:

A. **It occurs before the first cell division**

B. **It occurs following multiple cell divisions**

C. **It is characterized by membrane blebbing**

D. **It is a consequence of p53 activation**

Lecture 4: DDR

From the standpoint of DNA repair, what type of insult is most lethal to cells:

A. **Low-LET**

B. **Ultraviolet light**

C. **Protein misfolding**

D. **High LET**

Lecture 4: DDR

Which of the following genetic defects is most likely to lead to severe toxicity during radiotherapy?

A. **Mutations in the ATM gene**

B. **Mutations in the p53 gene**

C. **Mutations in the BRCA2 gene**

D. **Mutations in a DNA glycosylase**

E. **All of the above**

Reference: L4 slides 18, 24, 37

Lecture 4: DDR

If you could block any DNA pathway in combination with radiation, what would you target?

- **What limitations do you have to consider?**

Reference: L4 slides 5, 37, 39, 41

Lecture 4: DDR

What do cell cycle checkpoints accomplish:

A. Preventing cells from mitotic entry with damage
B. Providing time for repair
C. Increasing radioresistance
D. Reducing replication errors
E. All of the above

Reference: L4 slides 18, 24, 37