

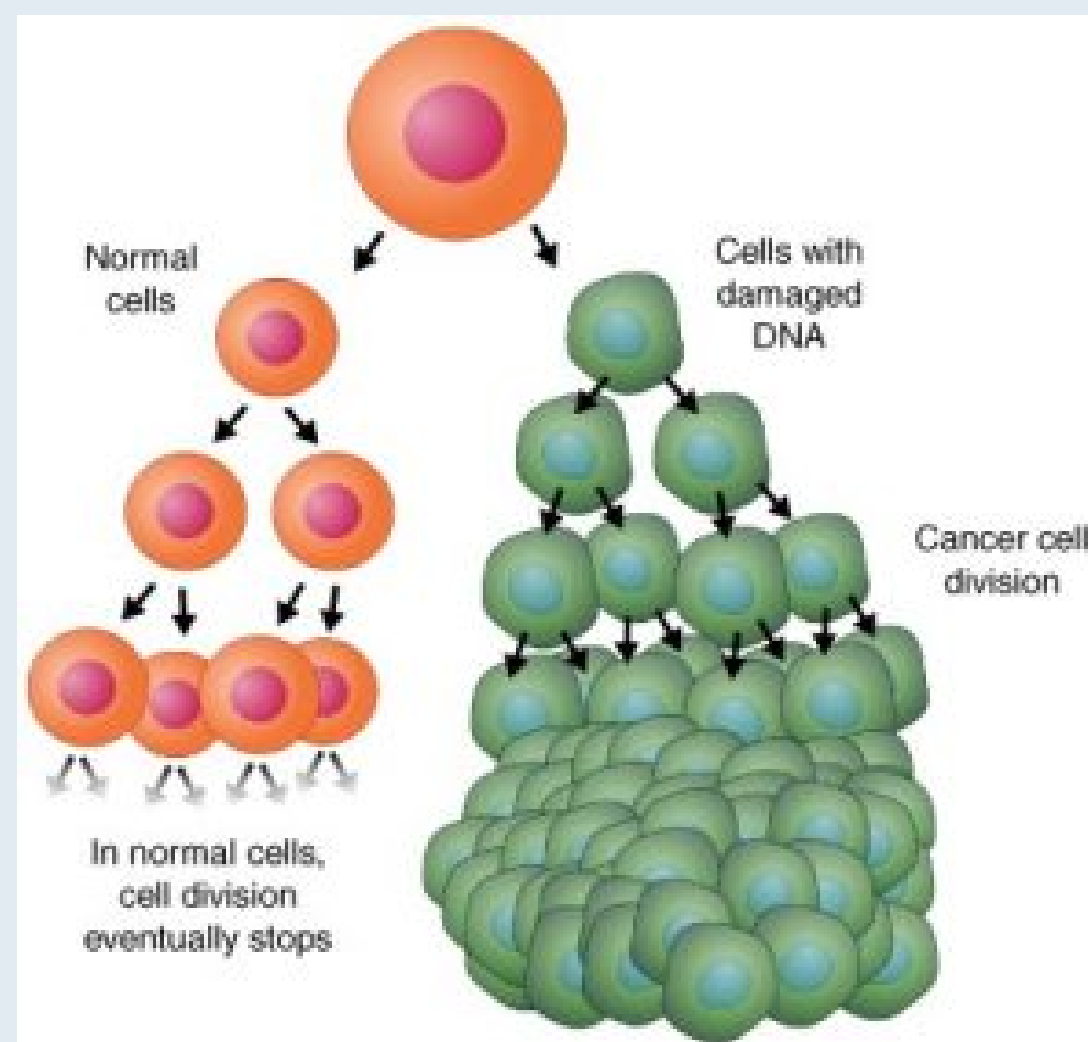
Medical Physics in Radiotherapy

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What is cancer & radiotherapy?

All of our organs are made up from tissues, which are made up from cells.

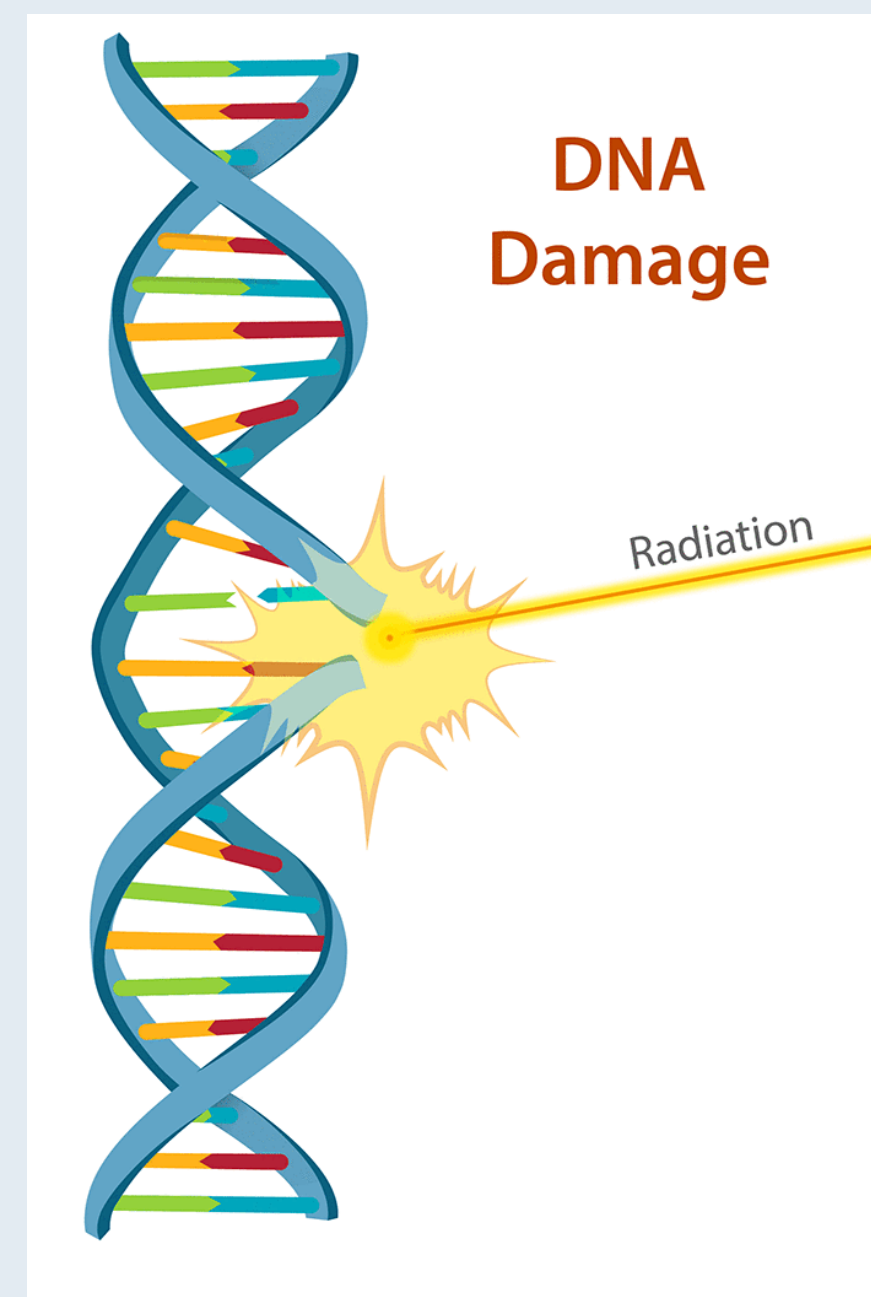
Cancerous cells start to divide and multiply uncontrollably resulting in tumours, which can invade healthy tissues.



Normal cell division vs cancer cell division.¹

Radiotherapy uses high energy x-rays to target cancer cells, causing a break in the DNA to prevent the cells from replicating.

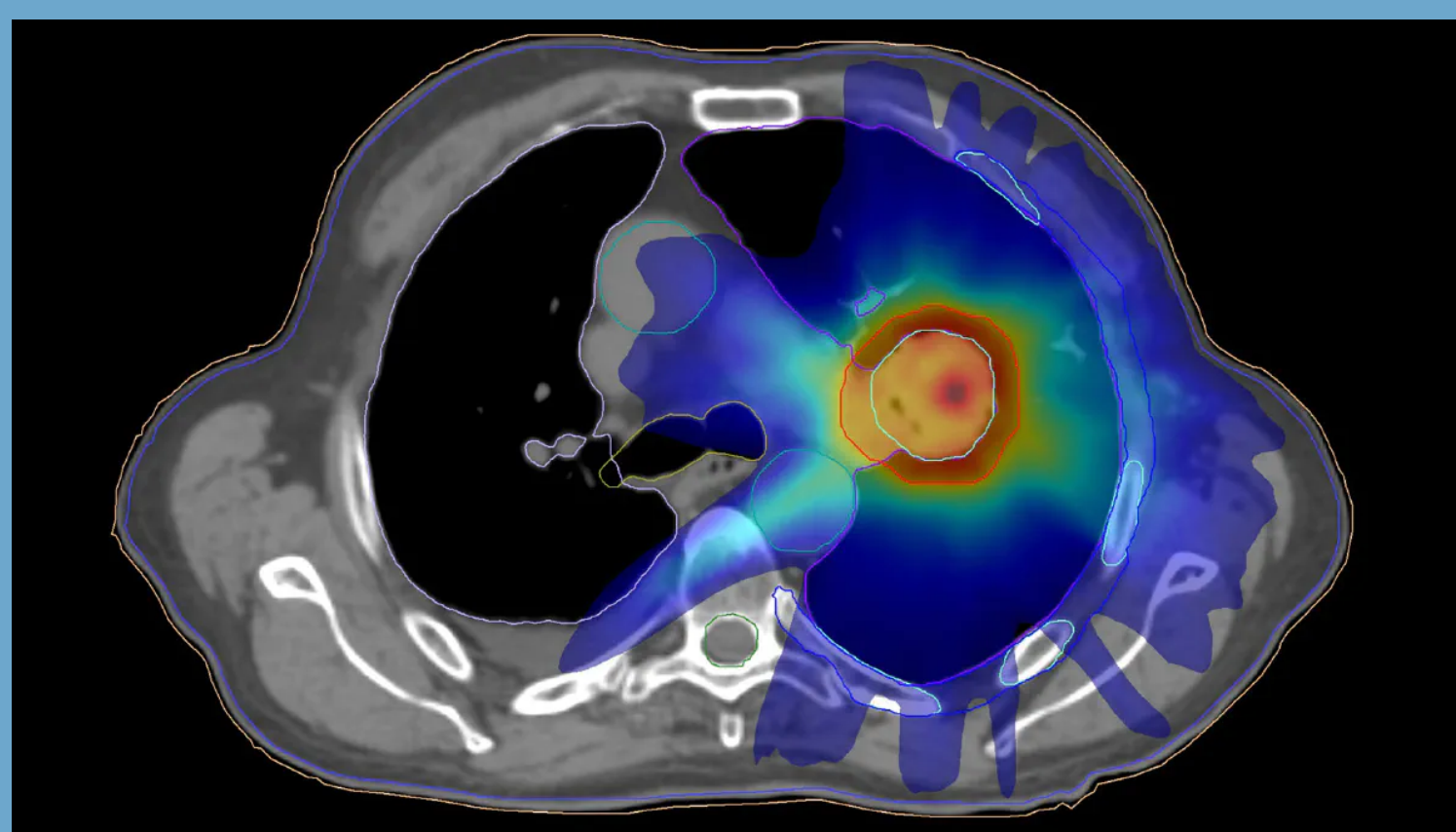
A treatment machine (linear accelerator - "linac") rotates around the patient to deliver radiation to the cancerous tumour.



Radiation damaging DNA.²

What does a Medical Physicist do?

Physicists use images acquired from a CT scanner to create a treatment plan. The aim of the plan is to direct the radiation to the cancerous cells, whilst avoiding healthy organs.



Treatment plan - red = high dose, blue = low dose.³

Physicists perform checks on the linac, ensuring it is operating safely for patient treatment. These checks are required so the patient doesn't receive more/less radiation than intended - which can affect their treatment!



Linear accelerator.

Why might you be interested in a career?

- A valuable career combining physics with healthcare.
- A chance to be involved in cutting edge research.
- To take part in implementing new equipment and techniques for cancer treatment.
- Work with a variety of healthcare professionals, from radiographers to doctors.
- An opportunity to make a difference to patients treatment.



× RADIATE ×
POSITIVITY

References

- [1] Oncology 101 Cancer Basics. (n.d.). [online] Available at: <https://practice.asco.org/sites/default/files/drupalfiles/content-files/practice-support/documents/PS-2017-Oncology-101-Cancer-Basics.pdf> [Accessed 17 Jan. 2023].
- [2] Canadian Nuclear Safety Commission (2010). Radiation Health Effects - Canadian Nuclear Safety Commission. [online] [Nuclearsafety.gc.ca](http://nuclearsafety.gc.ca/eng/resources/radiation/introduction-to-radiation/radiation-health-effects.cfm). Available at: <http://nuclearsafety.gc.ca/eng/resources/radiation/introduction-to-radiation/radiation-health-effects.cfm>.
- [3] www.elekta.com. (2021). Versa HDTM | Radiation Therapy | Cancer Care | Elekta. [online] Available at: <https://www.elekta.com/products/radiation-therapy/versa-hd/#bottom> [Accessed 17 Jan. 2023].