making chemotherapy more effective

So as we get older our body accumulates mutations in key genes & these changes lead to cells growing uncontrollably...

The way chemotherapy works is by targeting cells that are dividing fast, so these tend to be cancer cells, but not exclusively.

...that's why there is nasty side effects, because chemotherapy is not specific...

I'm looking at how we reduce chemotherapy dose → by targeting other pathways in the DNA damage pathways → so can reduce toxic side effects

Chemotherapy is a broad term

describes a drug that targets anything involved in DNA replication or DNA repair

Platinum (most common) is the one I work with... and is a good chemotherapy as it kills the cells...

so how can you target cancer cells specifically?

we're looking at specific alterations that cancer cells have that normal cells don't... that's known as targeted therapies

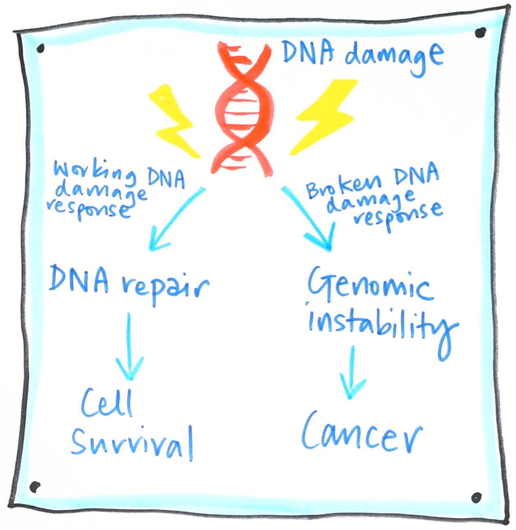
when DNA replicates through cell division the two strands get pulled apart

very toxic to cells - cells tends to kill itself

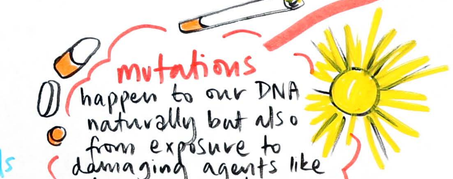
issues with resistance ...that's implicated as the DNA damage response

happens all the time & usually gets repaired

However certain therapies can take advantage of damage repair as a way to fight cancer. these chemotherapies are designed to directly damage our DNA as a way of killing the cancer cells



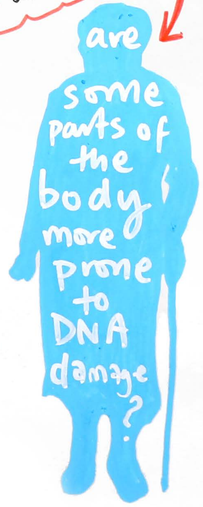
Sometimes mutations in important genes means a cell cannot repair themselves properly & can lead to cancer



mutations happen to our DNA naturally but also from exposure to damaging agents like drugs, UV, or tobacco

DNA repair is very important when talking about cancer. Our genes pick up mistakes (mutations) when cells divide

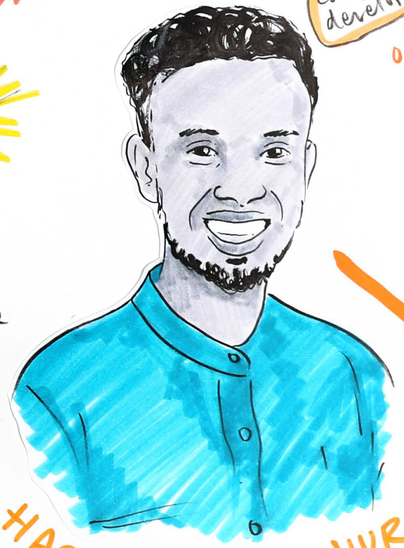
liver & gastro are exposed more



our lab is interested in liver... & a lot of work to study liver cancer is on mice but one of my colleagues was looking how we can develop...

...liver organoids... in a droplet

...grow in a 3D model...



HASHIM AHMED NUR

What would you like to achieve at end of PhD?

I'd like to discover a DNA repair protein that I can target with my platinum agent so that we can give platinum at lower concentrations, lower doses. So that fewer patients develop resistance and get fewer side effects...