

Drug-resistant Tumor Cell

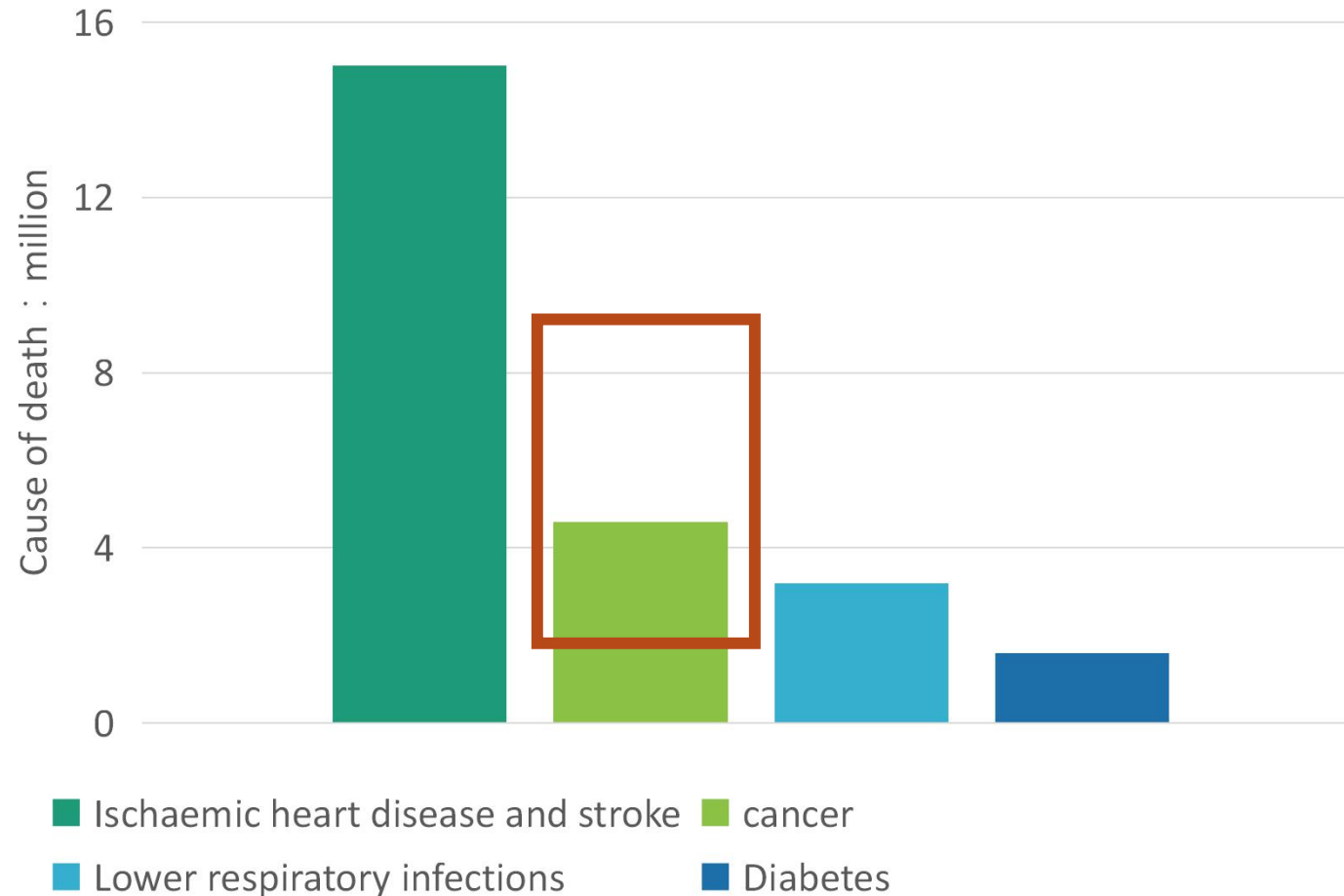


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The data comes from the WHO, 2015

Top causes of death globally



- *Cancer is the second cause of death in the world.*
- *In 2012, there was 12.7 million new cases.*
- *8.8 million cancer patients were dead in 2015.*

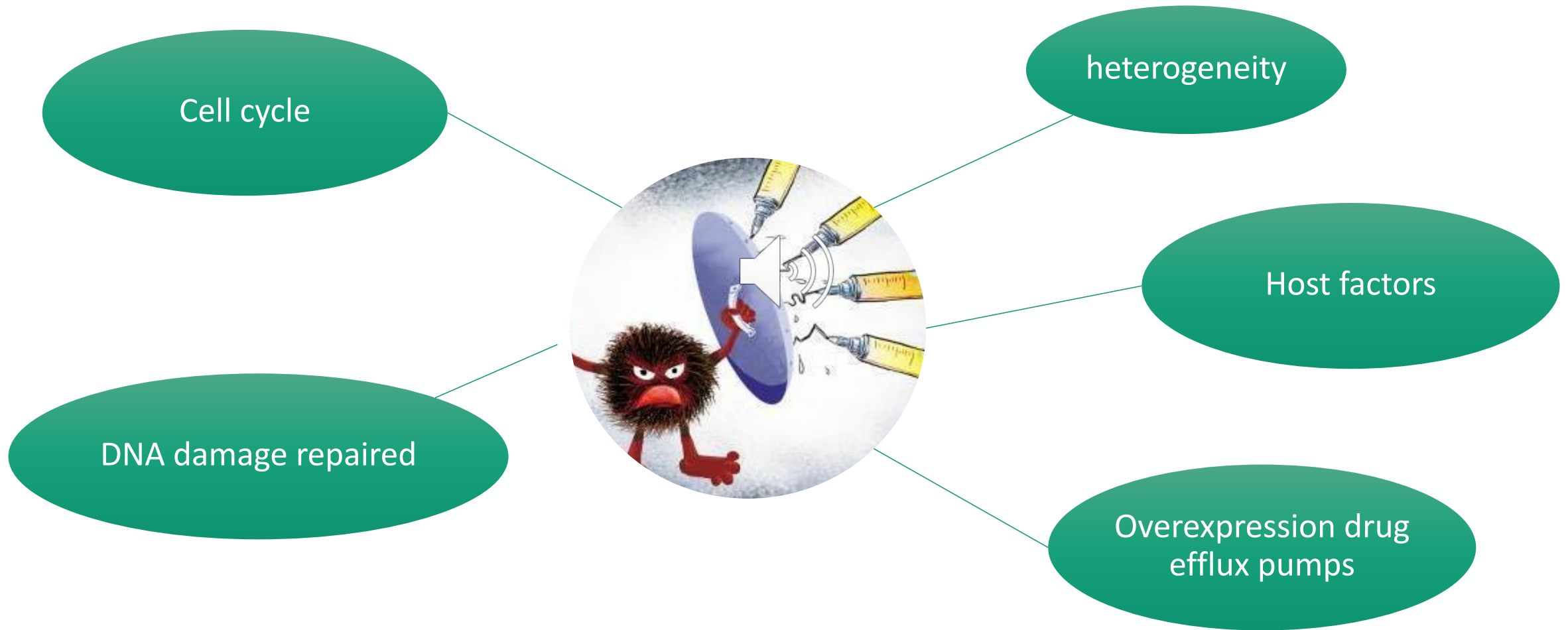




CANCER DRUG RESISTANCE



Why does Cancer Drug Resistance arise?



Analysis before and after Drug Treatment

Cancer Cell lines

- Establishment of isogenic pairs of drug resistant and drug sensitive cell lines
- Sensitive cell lines with applied Mutagenesis
- Gain/Loss of function screens in sensitive cell lines

Mouse Models

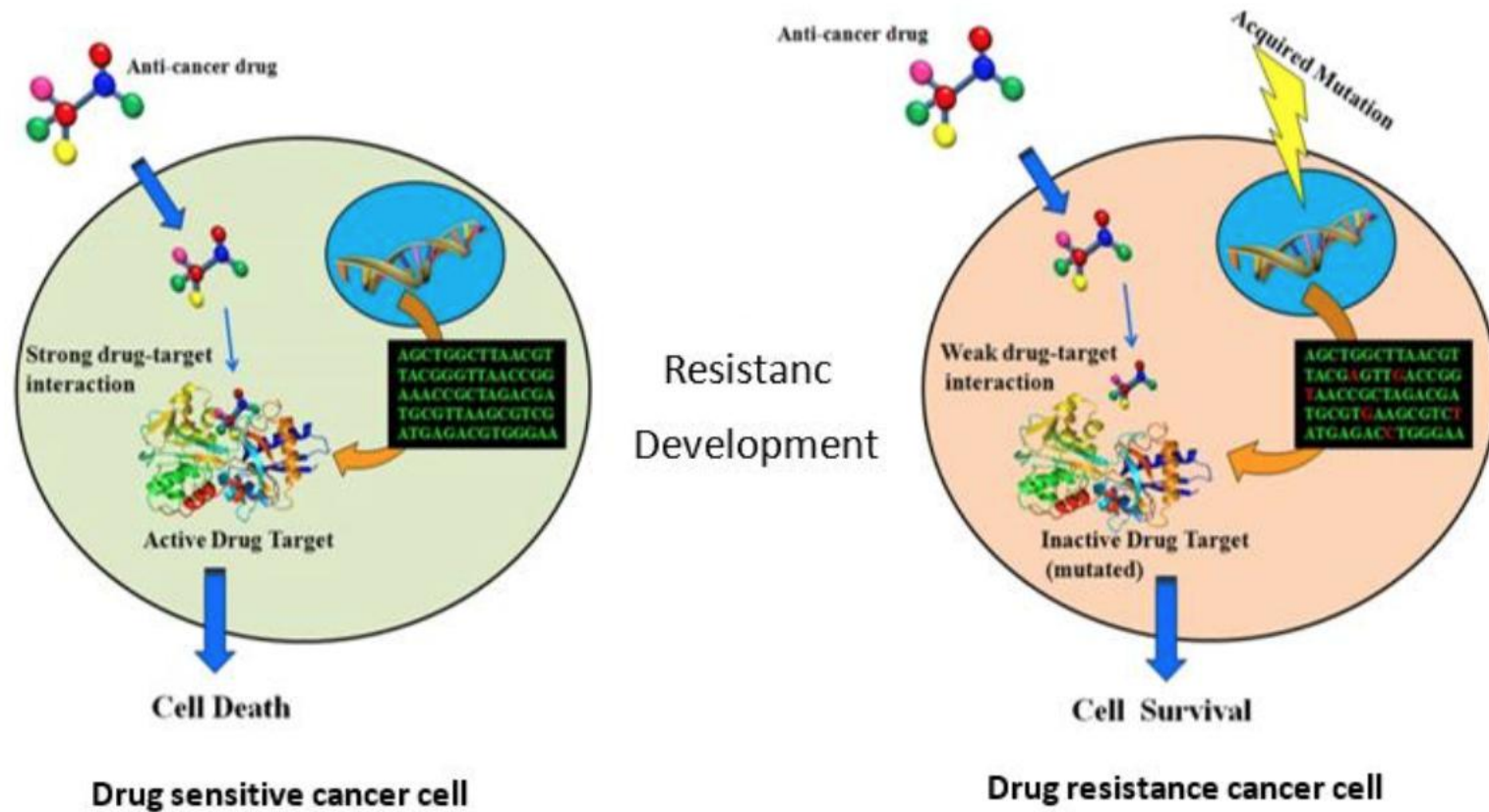
- *In vivo* studies using xenografts or genetically engineered mouse (GEM)

Human tumor samples

- Analysis of tumor samples from patients and control samples from healthy donors



Drug-Resistant cell model established



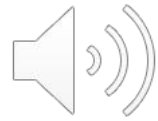
Drug-resistant cell models are developed by pulsed or repeatedly exposing cancer cells growing in cell culture to drugs.





Strategy #1 Drugs stimulate

- ✓ a continuous increase in the concentration of the drug over time
- ✓ a second and final increase in the drug concentration
- ✓ maintaining the same drug concentration



Strategy #2 Time dependence

- ✓ the cells were cultured continually in the presence of the drug
- ✓ the cells were treated for short periods of time (pulsed treatment)



Strategy #3 Transfection & cloning

- ✓ Transfected multidrug-resistant protein with physical or biological methods
- ✓ Isolation of surviving clones derived from parental cells treated with increasing concentrations of a certain drug



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