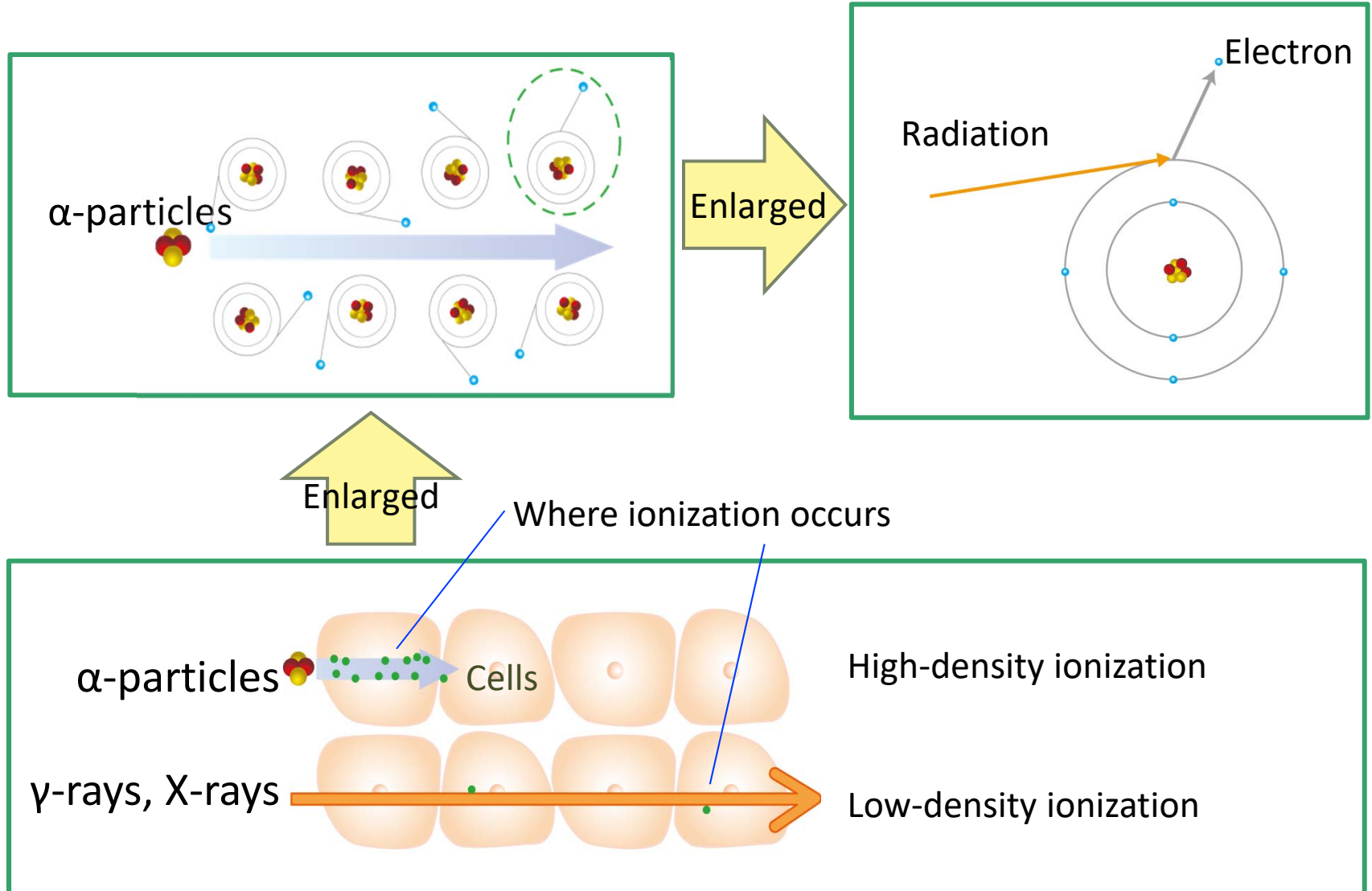
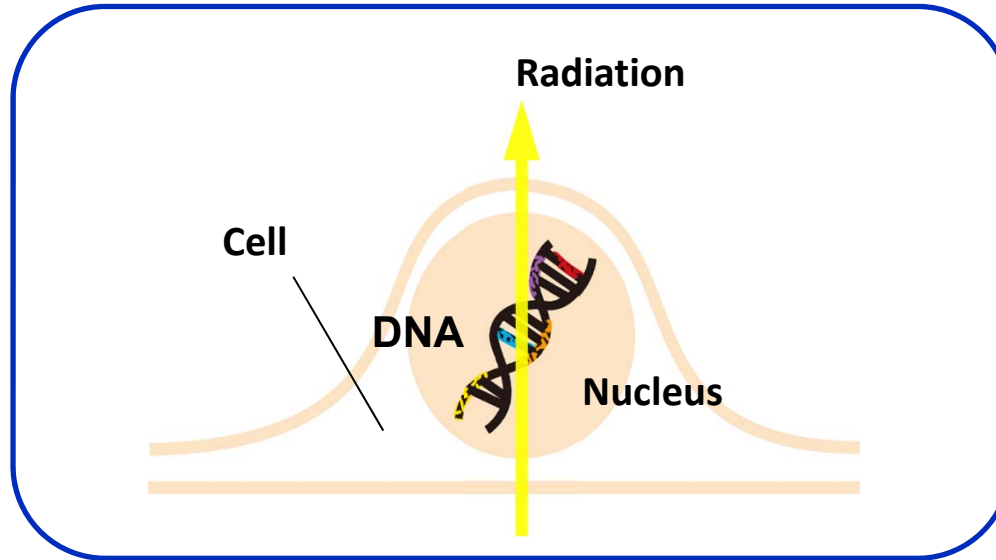


Ionization due to Radiation



Damage and Repair of DNA



DNA



Damage



Repair



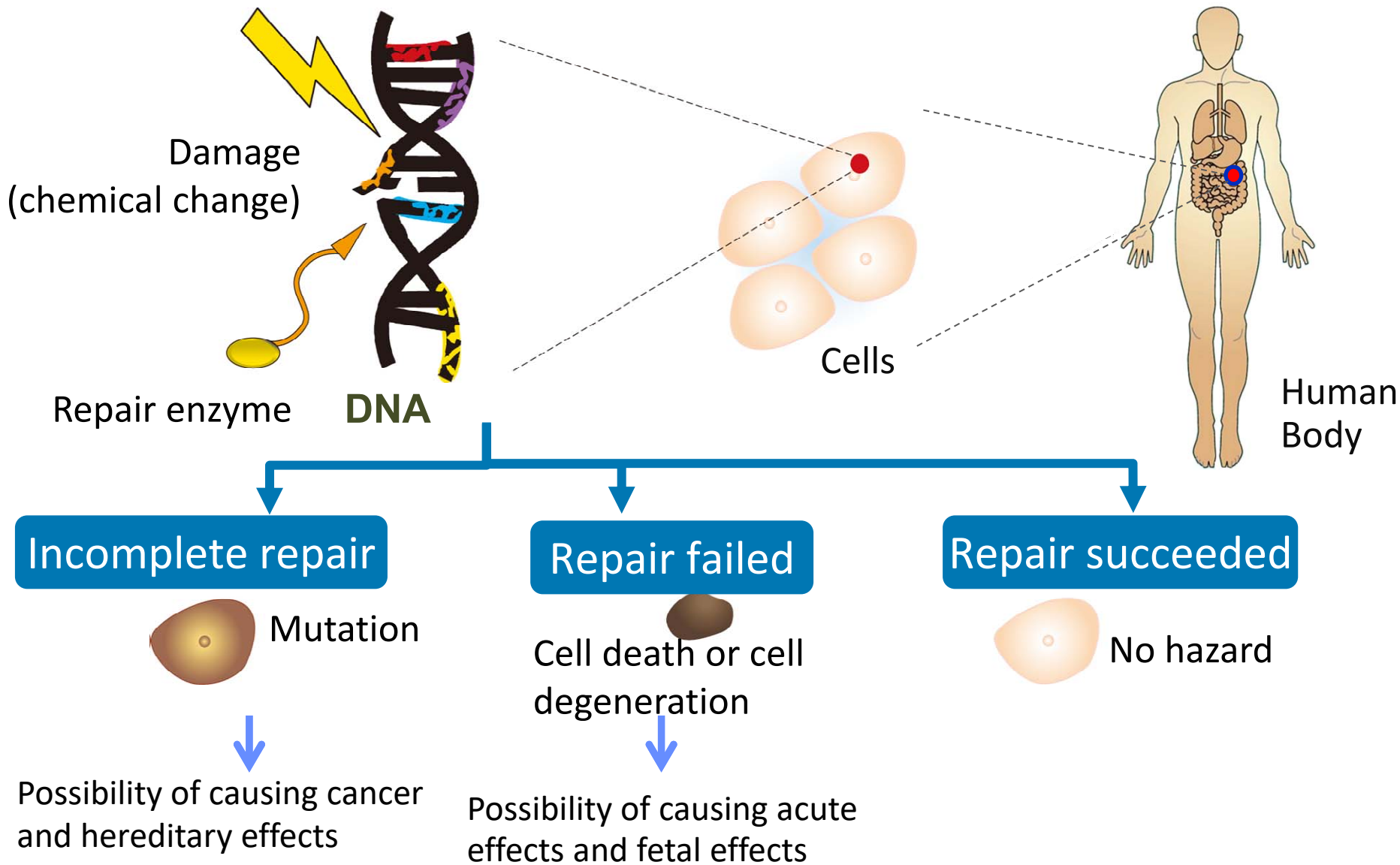
Repair
enzyme



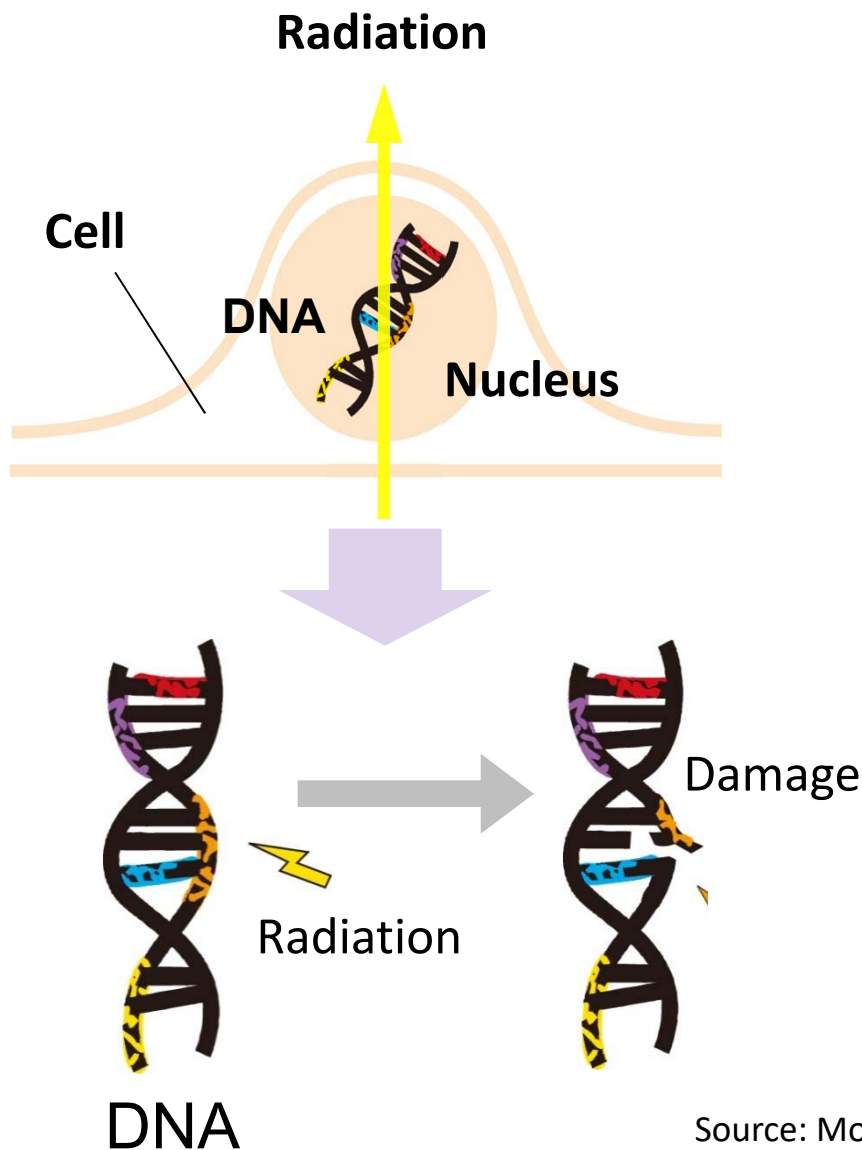
Complete
repair

Partial or
incomplete
repair

DNA → Cells → Human Body



Radiation Damage to DNA



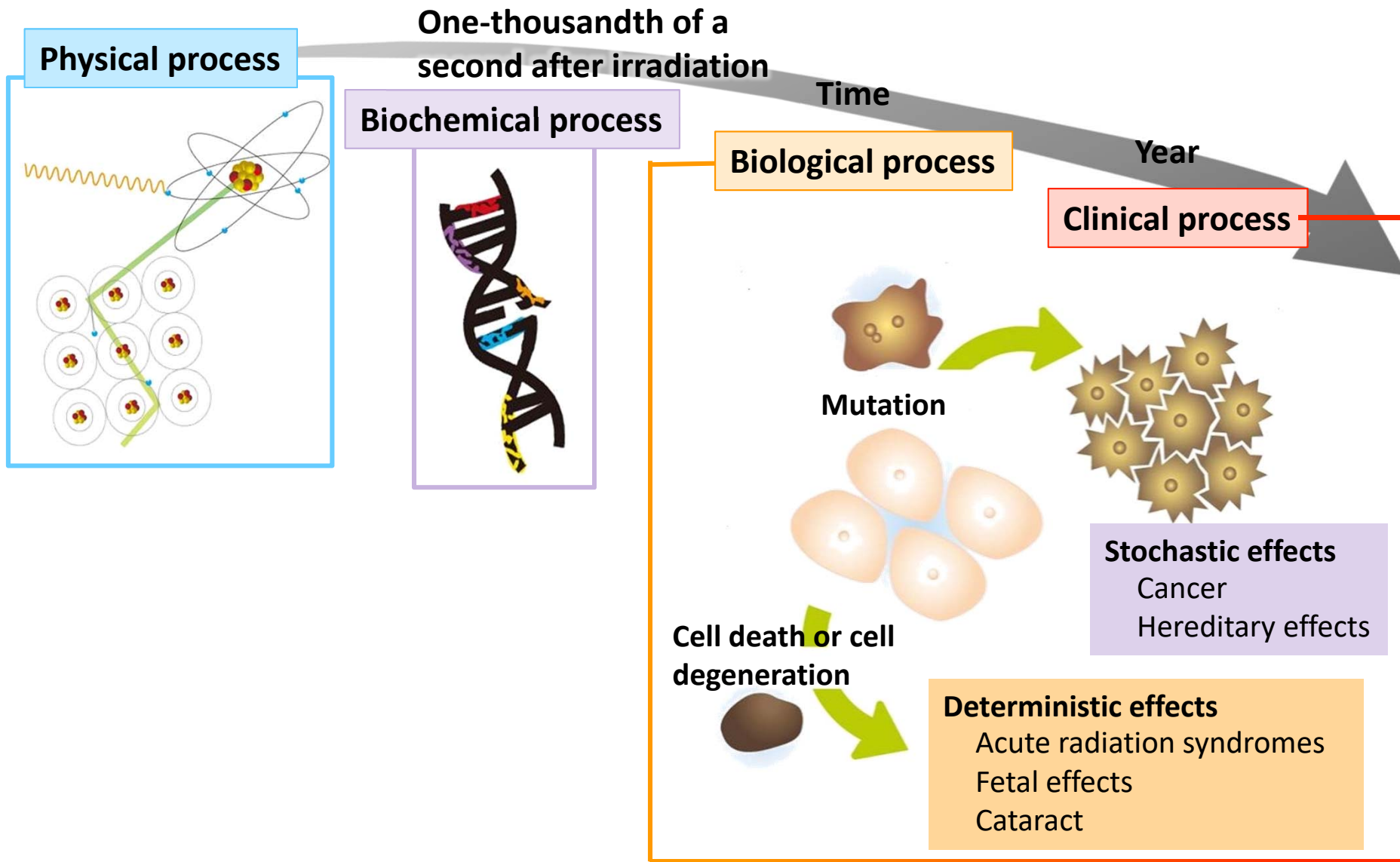
Damage per **1 mGy of X-rays**
(per cell)

Base damage 2.5 locations

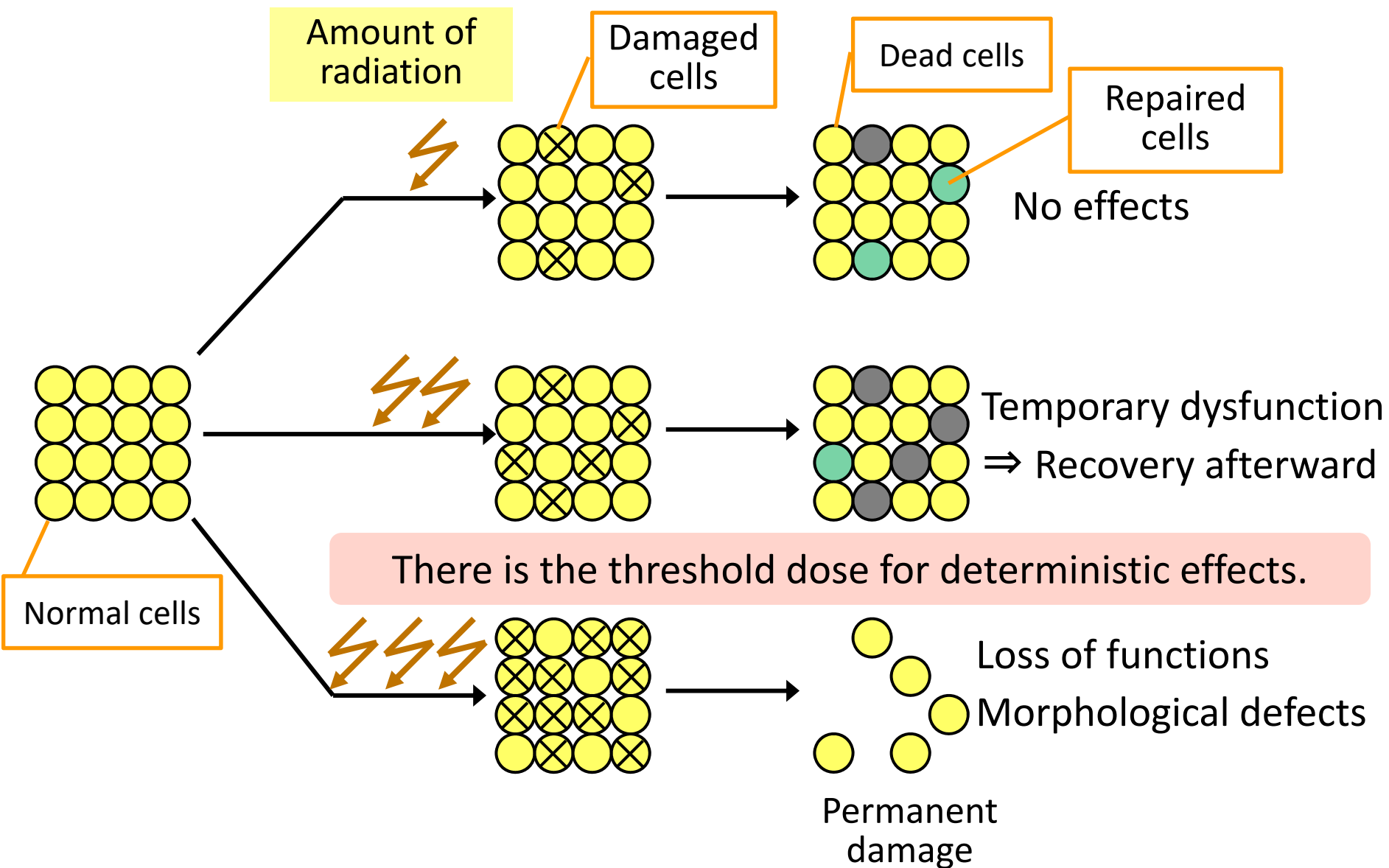
Single-strand break 1 location

Double-strand
breaks 0.04 locations

Lapse of Time after Exposure and Effects



Deterministic Effects



Radiosensitivity of Organs and Tissues

Active cell division High sensitivity

Hematopoietic system: Bone marrow and lymphatic tissues
(spleen, thymus gland, lymph node)

Reproductive system: Testis and ovary

Gastrointestinal system: Mucous membrane and small-intestinal
villus

Epidermis and eyes: Hair follicle, sweat gland, skin and lens

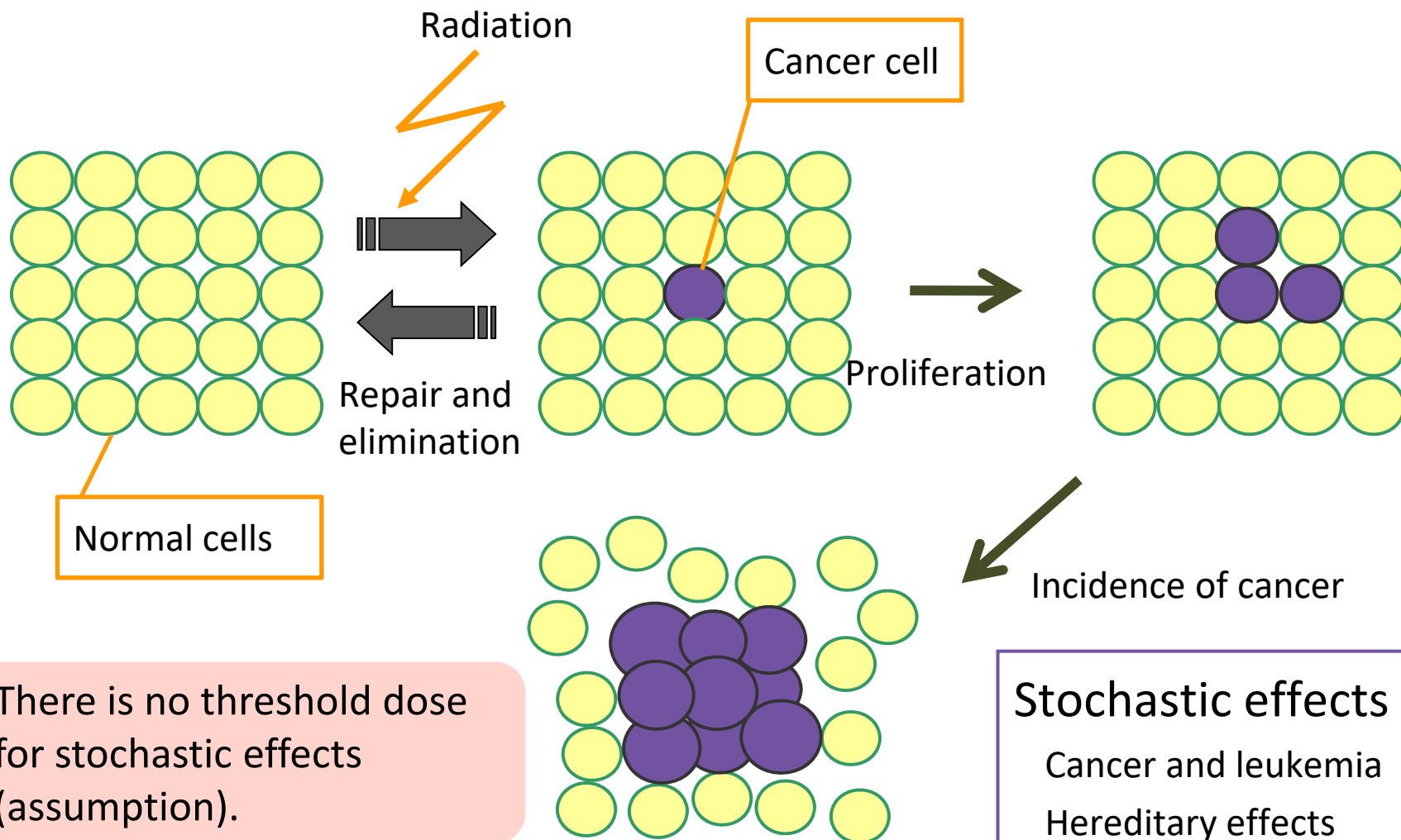
Other: Lung, kidney, liver and thyroid gland

Support system: Blood vessel, muscle and bone

Transmission system: nerve

No cell division Low sensitivity

Stochastic Effects



There is no threshold dose for stochastic effects (assumption).