Radiation Damage in Physiological Environments

M. Folkard & K Prise

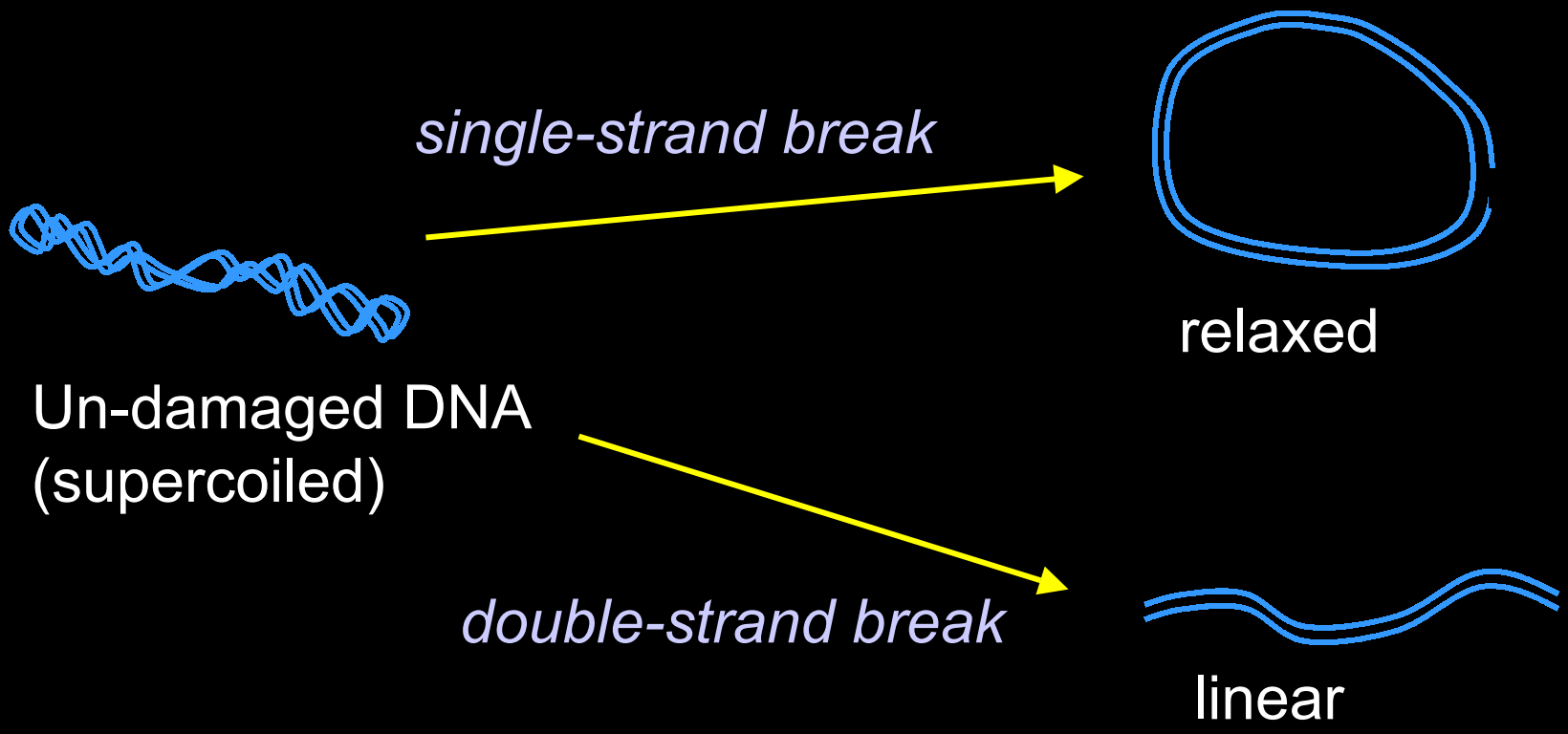
Gray Cancer Institute, PO Box 100, Mount Vernon Hospital, Northwood HA6 2JR, UK

folkard@gci.ac.uk

Measurement of DNA damage

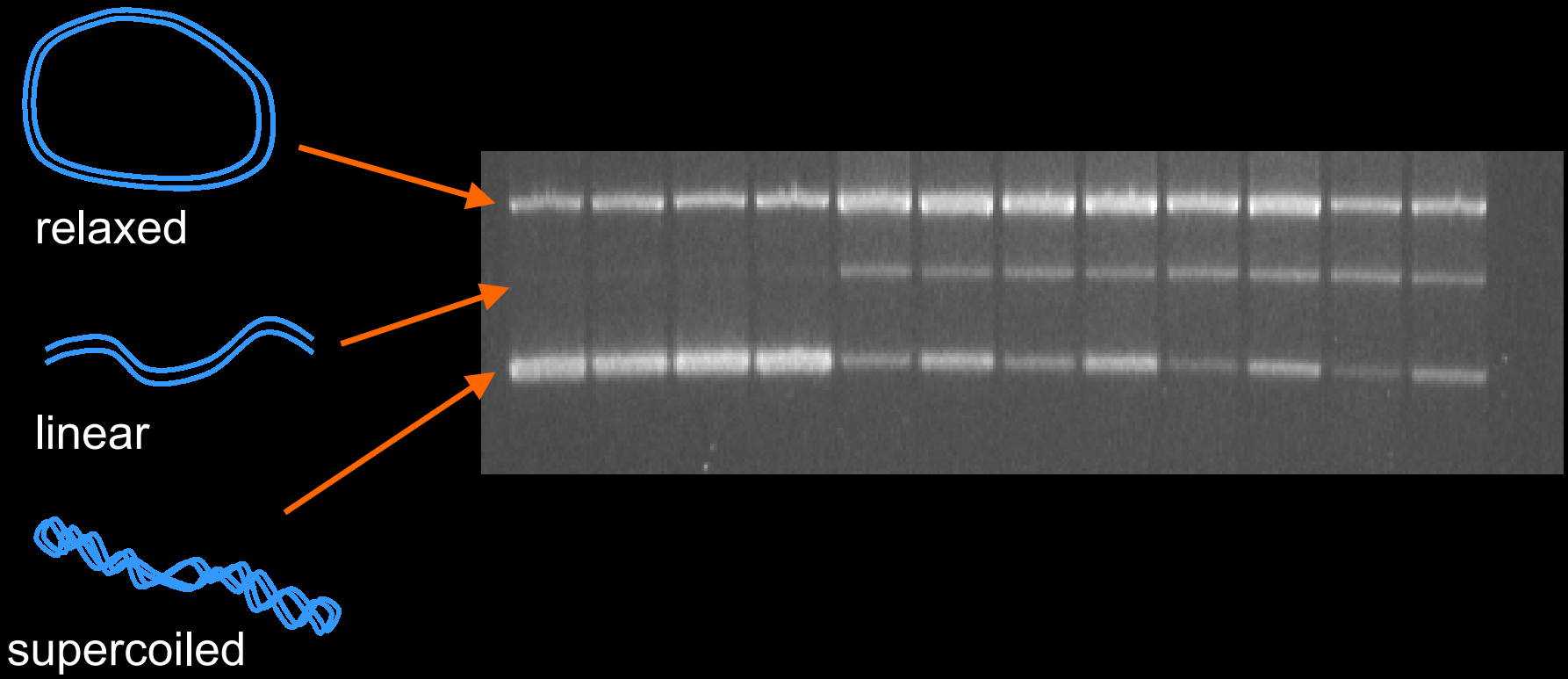
Use Plasmid DNA (circular double-stranded molecules of DNA, purified from bacteria)

i.e. pBR322 (4363 base-pairs)



Measurement of DNA damage

These forms can be easily separated by gel-electrophoresis



Questions:

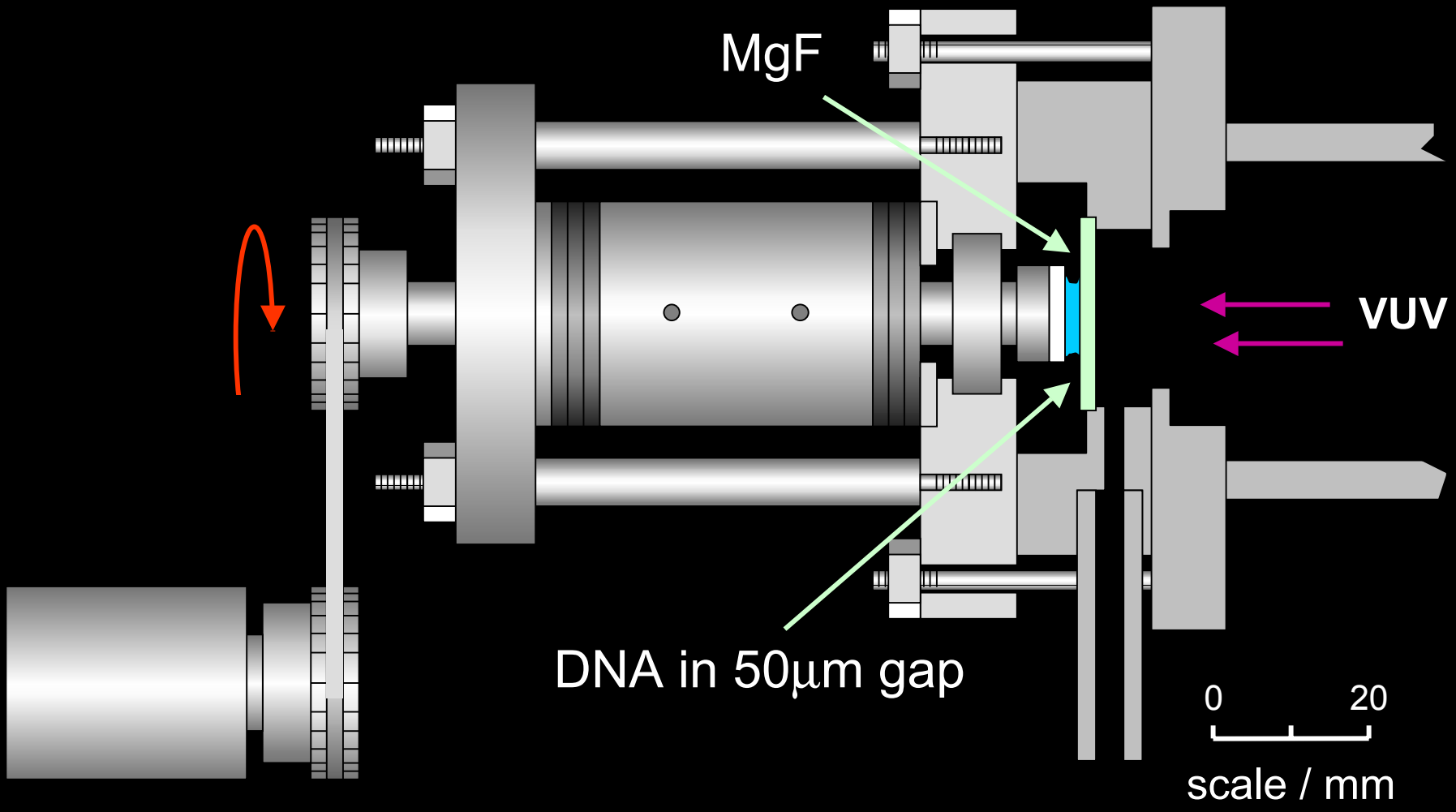
- How much energy is involved in the induction of single- and double-strand breaks by ionizing radiations?

- What is the minimum energy required to produce:

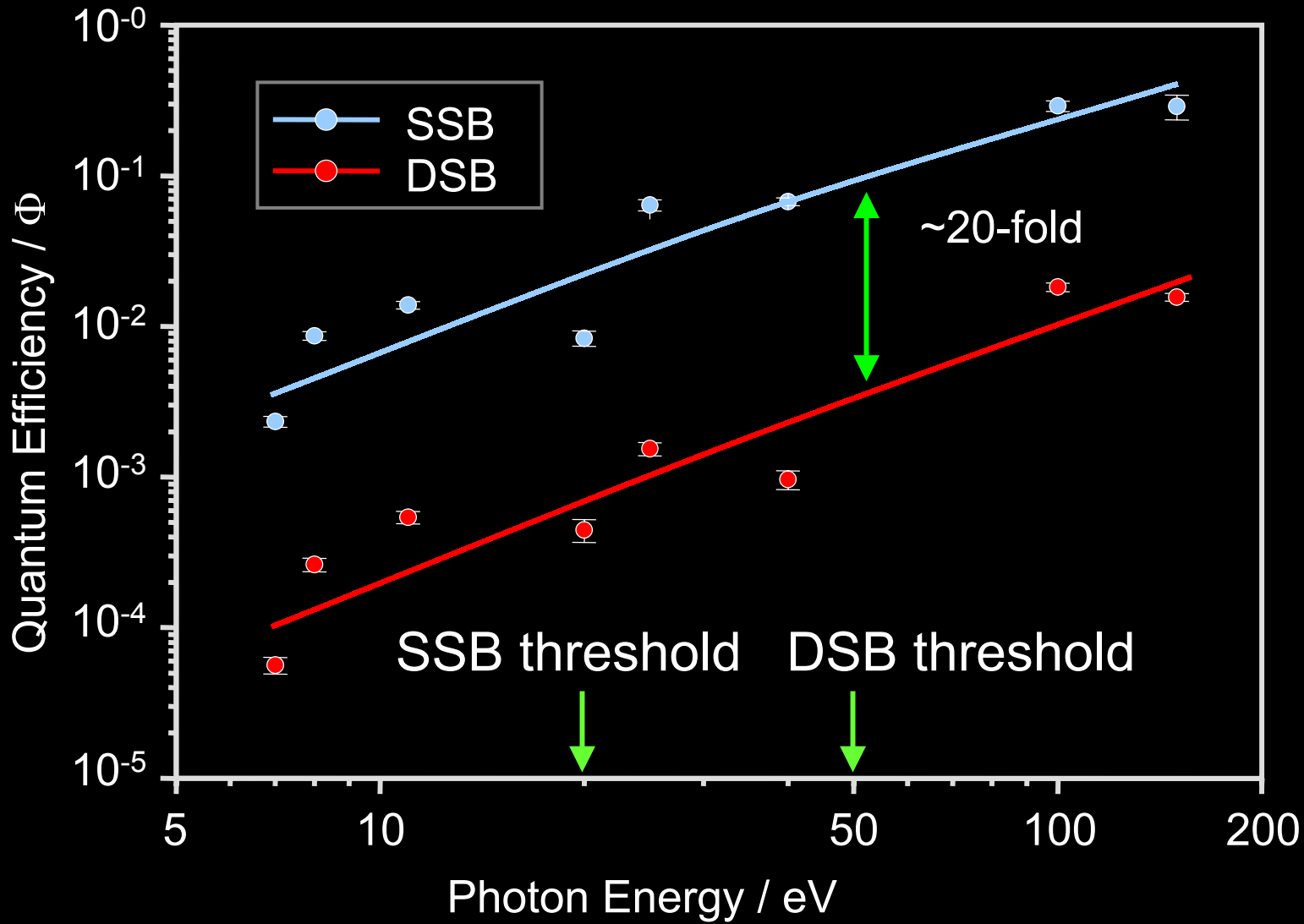
  1) a single-strand break

  2) a double-strand break

‘DNA in solution’ VUV irradiator

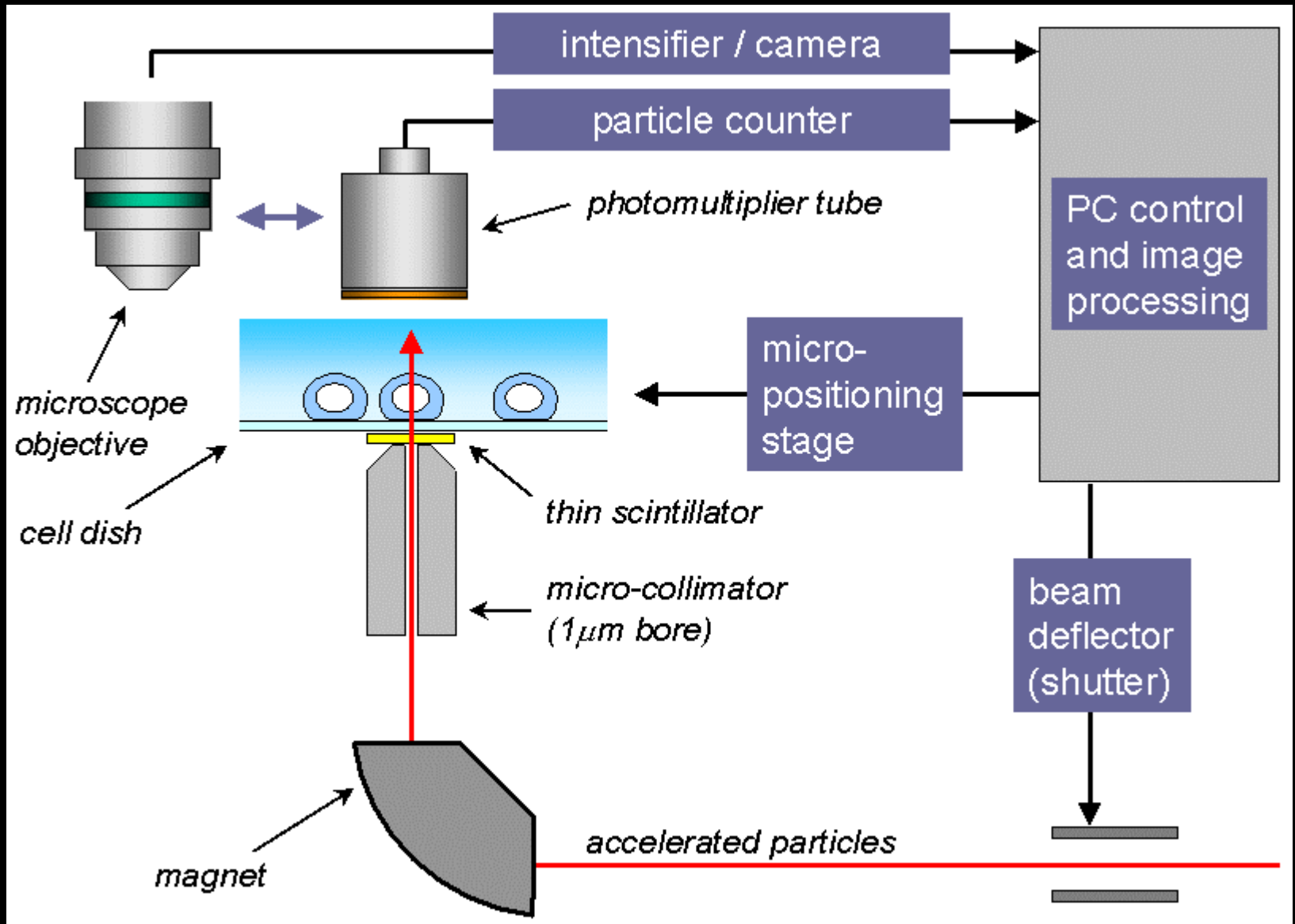


Q.E. for SSB & DSB (dry plasmid)



Prise, Folkard *et. al*, 1995, *Int. J. Radiat. Biol.* **76,** 881-90.

The GCI microbeams



Bystander and other 'non-targeted effects of radiation