

From the consultation paper:

DNA Strand Break Assay (Comet assay): Alkaline treatment converts certain types of DNA lesions into strand breaks that can be detected by the alkaline elution technique or by measuring migration rate through a filter, or by the single gel electrophoresis or Comet assay in which cells embedded in a thin layer of gel on a microscope slides are subjected to electric current causing shorter pieces of DNA to migrate out of the nucleus into a Comet tail. The extent of DNA migration is measured visually under the microscope on stained cells.

There are many things wrong with this.

1. Alkaline elution technique is the technique of measuring migration through a filter.
2. Alkaline unwinding is the other technique that was probably intended.
3. The assays measure DNA breaks that are present; conversion of lesions that are alkali-labile also occurs. But it is misleading to say that alkaline treatment converts lesions to breaks, since this discounts the frank strand breaks.
4. The principle of the comet assay is not that 'shorter pieces migrate out of the nucleus'. It is an assay based on relaxation of supercoiling, and works at neutral pH (though of course not detecting alkali-labile sites, only strand breaks).
5. There is really no need for a capital C on comet!

Suggestion: Do not mention alkaline elution (or alkaline unwinding) as they are not used in genotoxicity testing and they invite confusion if mentioned with the comet assay. Instead, describe:

Comet assay for DNA breaks

The comet assay (single cell gel electrophoresis) detects DNA breaks, either single- or double-stranded, at the level of individual cells embedded in a thin agarose gel on a microscope slide. Lysis leaves DNA attached to a nuclear matrix, in effect as a series of supercoiled loops. A break will relax the supercoiling in a loop and allow it to be drawn towards the anode in subsequent electrophoresis. Images resembling comets appear with fluorescence staining; the proportion of DNA fluorescence in the comet tail indicates the number of relaxed loops and therefore the frequency of breaks. The alkaline version of the assay is most used; it can detect alkali-labile lesions as well as frank breaks.