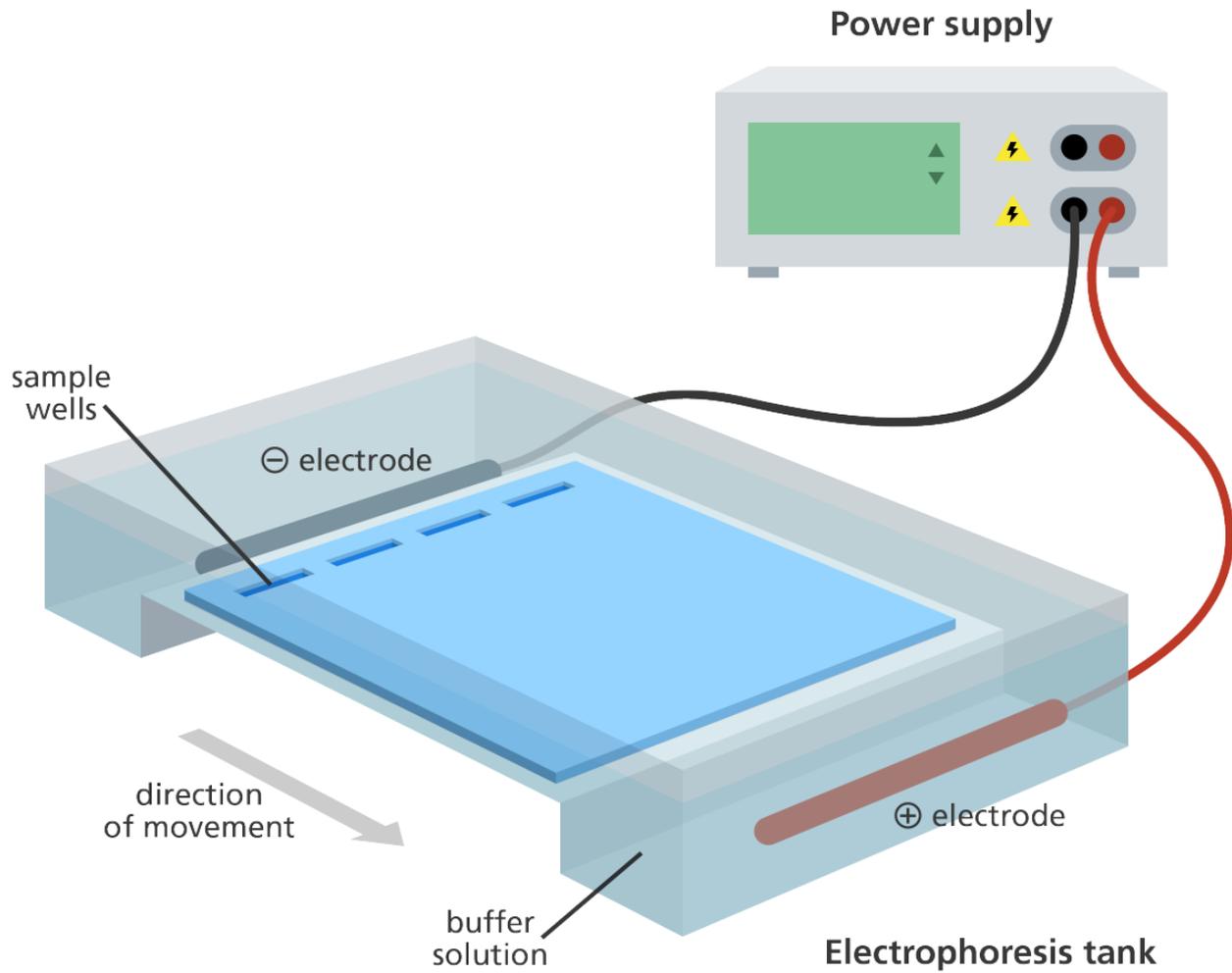


***in vitro* methods in studies of
nucleic acids**

Separation of DNA

- DNA molecules could be separated by size using gel electrophoresis
- DNA molecules are negatively charged thus if electric field is applied to DNA solution the molecules will migrate to the positive electrode. This movement of molecules in electric field is called *electrophoresis*.

- The speed of the movement depends on the ratio of charge of the molecule to its molecular mass.
- DNA is a periodic molecule thus the charge to molecular mass ratio is approximately the same for all DNA molecules
- Thus, if there is no resistance on the way all DNA molecules would migrate with the same speed
- In order to separate DNA molecules by size the electrophoresis is performed in a gel a special porous medium. The size of the pores is comparable to the separating DNA molecules' size.
- Larger DNA molecules will encounter stronger resistance and migrate slower than smaller DNA molecules.



- DNA is visualized with special dyes that bind to it. Most commonly used is Ethidium Bromide – a fluorescent dye.
- DNA fragment size is determined by comparing the position of the fragment on the gel to the molecular weight marker.

