

## Biotech uses fermentation too...

Fermentation technology is the oldest of all biotechnological processes.

**Fermentation** is a process of chemical change caused by organisms or their products, usually producing effervescence and heat.

Microbiologists consider fermentation as **'any process for the production of a product by means of mass culture of micro-organisms'**.

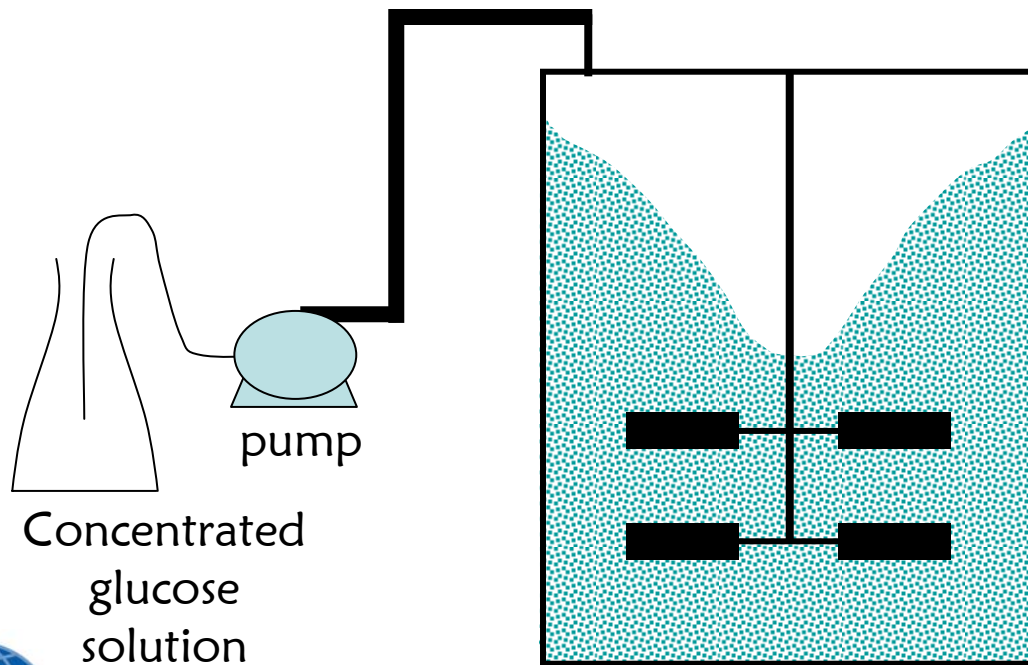
Biochemists consider fermentation as **'an energy-generating process in which organic compounds act both as electron donors and acceptors'**; hence fermentation is **'an anaerobic process where energy is produced without the participation of oxygen or other inorganic electron acceptors'**.



# Fermentation Modes

## Fed-Batch

As with batch, add media, inoculum, grow it up. However, to extend the growth time, fresh substrate (glucose or sugar plus other nutrients) are added once the balanced growth phase is well under way.



Nothing is removed from the tank until the end of the run, so to save room the inoculum is generally added to a half-empty tank.

