[2.49 Diffusion in unicellular organisms](http://eleanorleachbiology.posterous.com/249-diffusion-in-unicellular-organisms)

* Unicellular organisms includes fungi, bacteria and protoctista.
* These are all small cells.
* They all have a large surface area to volume ratio.
* Diffusion is short therefore it is fast.
* Single celled formulas can rely on diffusion because the distance is short so it is fast.

## [2.50 Transport systems in multicellular organisms](http://eleanorleachbiology.posterous.com/250-transport-systems-in-multicellular-organi)

* The thing with multicellular organisms is that the ratio of surface area to volume is quite small and the consequence of this is that the rate of diffusion is slow.
* Another issue is that the diffusion distance is large.
* The diffusion is so low that it cant support respiration, so the oxygen wouldn’t get to the cells fast enough so multicellular organisms have produced ventilation systems to detract oxygen from the air. Also they have a circulatory system to deliver the oxygen directly to the elephant cells.