



Example: carbohydrate catabolism

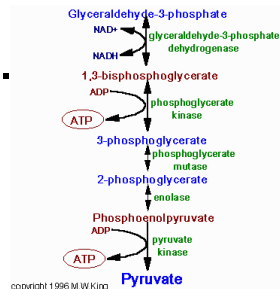
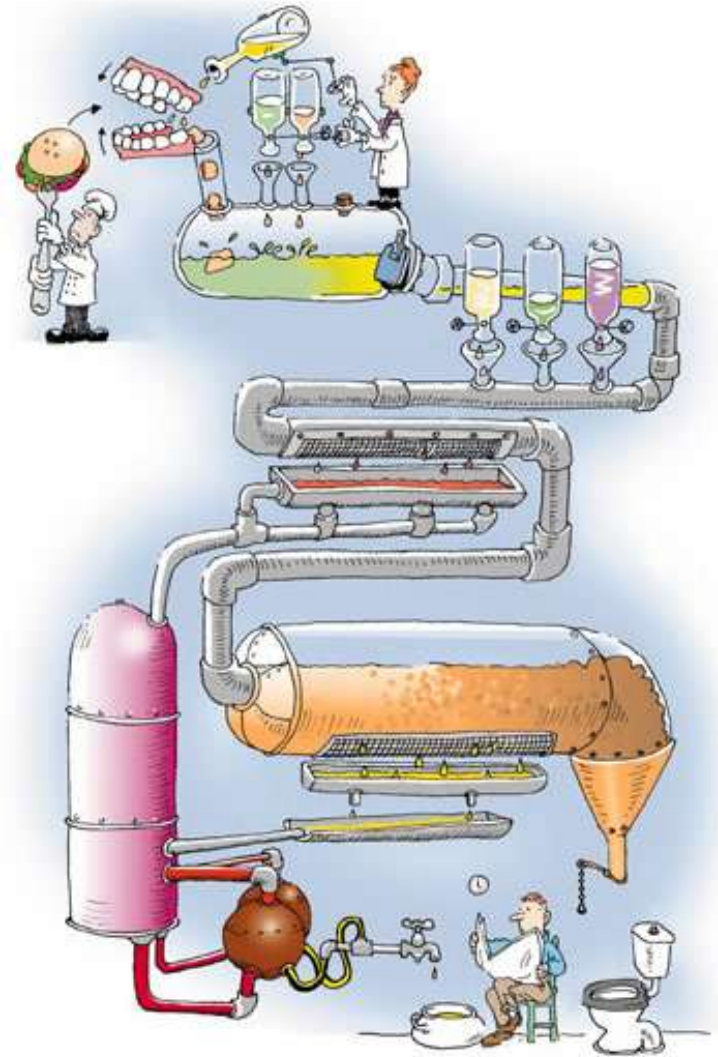
At present we have one term
'carbohydrate catabolism'

But carbohydrate catabolism differs
when looked at at different 'levels'

- cell
- multi-cellular organism

carbohydrate catabolism

- multi-cellular organism (human)
- lingual amylase in saliva (*extracellular*)
- α amylase in small intestine (*extracellular*)
- transported across intestinal wall to hepatic portal vein \rightarrow liver parenchymal cells/other tissues
- glycolysis etc. (*intracellular*)





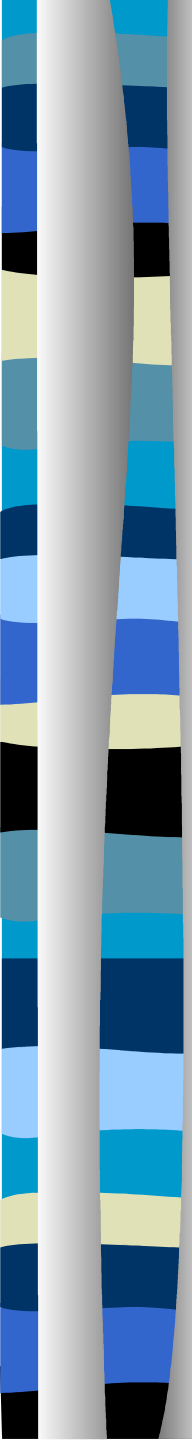
carbohydrate catabolism

So gps annotated to this process might include:

- lingual amylase, α amylase
- phosphofructokinase I, glyceraldehyde-3-phosphate dehydrogenase

But, in a single celled organism, only:

- phosphofructokinase I, glyceraldehyde-3-phosphate dehydrogenase



So, most metabolism is cellular, but in a multi-cellular organism, can be both cellular *and* organism level.

Same for transport:

– oxygen transport

- oxygen transport by haemoglobin around organism
- oxygen transport within cell to mitochondria by e.g. by myoglobin



- [-] biological_process

- [-] ⓘ cellular process

- [-] ⓘ cellular physiological process

- [-] ⓘ physiological process

- [-] ⓘ cellular physiological process



Solution

Split metabolism into 'cellular metabolism' and 'organism metabolism'

Most types of metabolism would just move to be children of 'cellular metabolism'

Make digestion a part_of 'organismal catabolism'



[-] biological_process

[+] ⓘ cellular process

[-] ⓘ physiological process

[+] ⓘ cellular physiological process

[-] ⓘ metabolism

[+] ⓘ biosynthesis

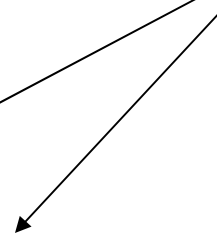
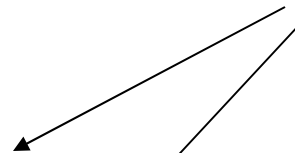
[+] ⓘ catabolism

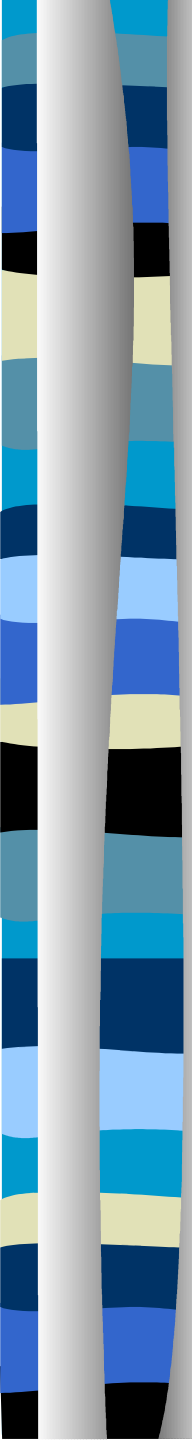
[+] ⓘ cellular metabolism

[+] ⓘ organismal metabolism

[+] ⓘ organismal physiological process

new terms





i metabolism

i biosynthesis

i catabolism

i cellular metabolism

i alcohol metabolism

i aldehyde metabolism

i amine metabolism

i amino acid and derivative metabolism

i aromatic compound metabolism

i cellular carbohydrate catabolism

i coenzyme and prosthetic group metabolism

i depsipeptide metabolism

i drug metabolism

i electron transport

i energy pathways

i glycerol ether metabolism

i heterocycle metabolism

i hormone metabolism

i isopentenyl diphosphate metabolism

i ketone body metabolism

i ketone metabolism

i lipid metabolism

i long-term maintenance of gene activation

i macromolecule metabolism

-

i organismal metabolism

i organismal carbohydrate metabolism

i organismal catabolism

i organismal lipid metabolism

i organismal protein metabolism

- 
- [-] ⓘ organismal metabolism
 - [-] ⓘ organismal carbohydrate metabolism
 - [-] ⓘ organismal carbohydrate catabolism
 - ☹️ carbohydrate digestion
 - [-] ⓘ organismal catabolism
 - + ☹️ digestion
 - [-] ⓘ organismal carbohydrate catabolism
 - ☹️ carbohydrate digestion