



Ecology and Biodiversity

With Dr. Declan McGlade



Loss of Biodiversity – H.I.C.O.P.



The five main things that can cause loss of biodiversity



Ecosphere



The Pond on my Window Sill

1) Succession & Climax communities

2) Food webs

3) Competition

4) Interactions between populations

5) Endosymbiosis

<https://www.youtube.com/watch?v=Jikt132Qhwo>



In the video



Life in Jars

<https://www.youtube.com/channel/UC0XNssyypOLiq4vVgXm9NtQ>

How ecosystems can start: Primary succession

Intermediate species

Climax community



Pioneer Species

Secondary Succession



Established
climax
community



Think of making the ecosphere as a disturbance...

We're changing some of the conditions of the ecosystem

Which ones?

- Climate (Biome)
- The Community
 - Maybe we didn't get all the populations

Because of that.... We have kind of started a new ecosystem

Remember that ecosystems are based on balance



So our pond on the windowsill will have to try and find a new balance

Maybe some predators are missing

Maybe some very important species are missing...

Like.... Keystone species?

Keystone species

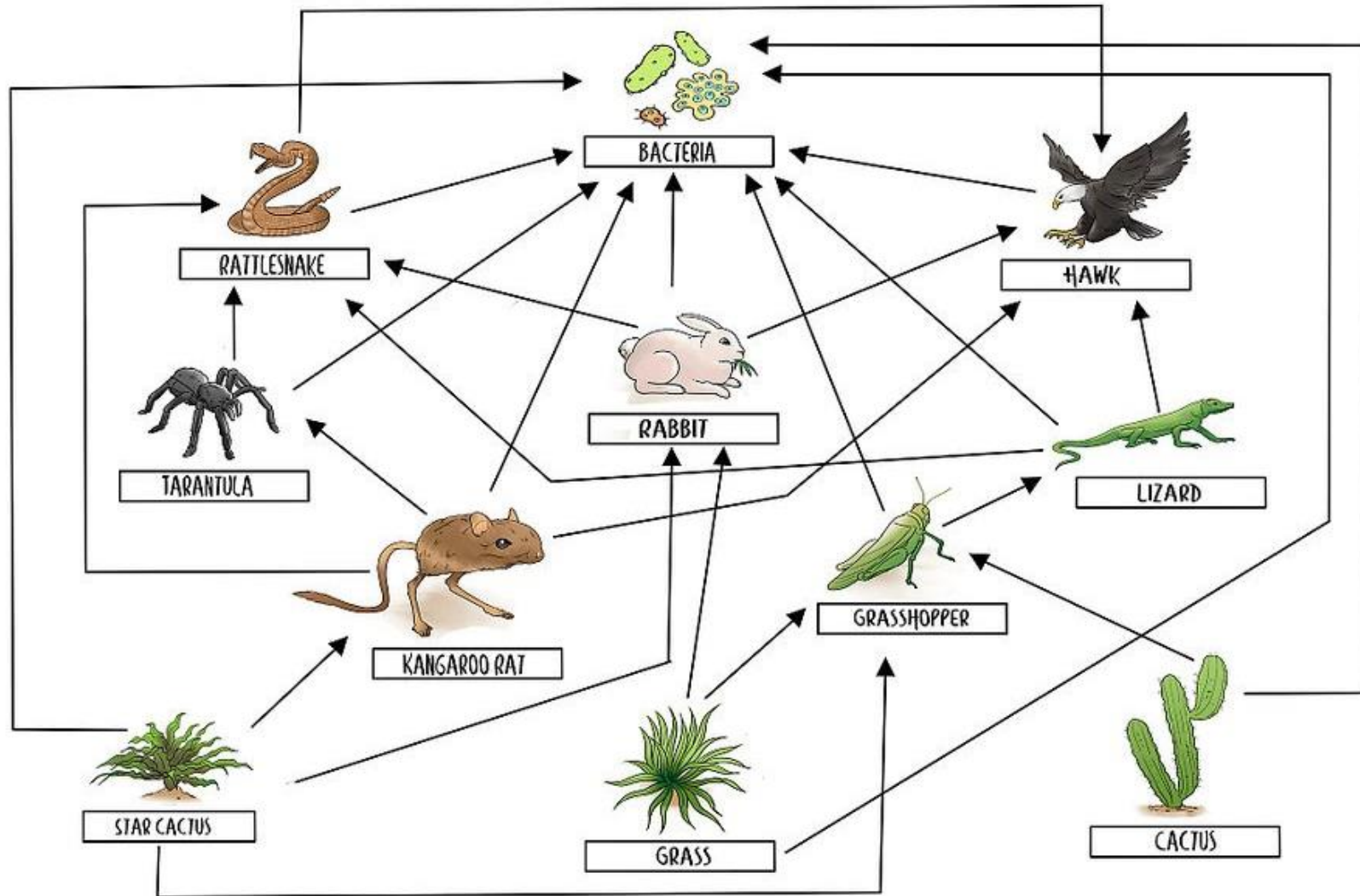


Primary producers

Organisms that can make their own food from **abiotic** sources



Food webs



Competition



Interaction between two predators

The hydra and the flatworm have the same niche!



They both eat the same prey...

And the worm could eat the hydra but he doesn't because the hydra can sting him

So they both occupy the same niche, or ecological space, and leave each other alone

The last one is... endosymbiosis

A **symbiotic** relationship is when both organisms benefit - the relationship goes both ways



The Hydra is a predator but it also contains algae

Those algae can do photosynthesis

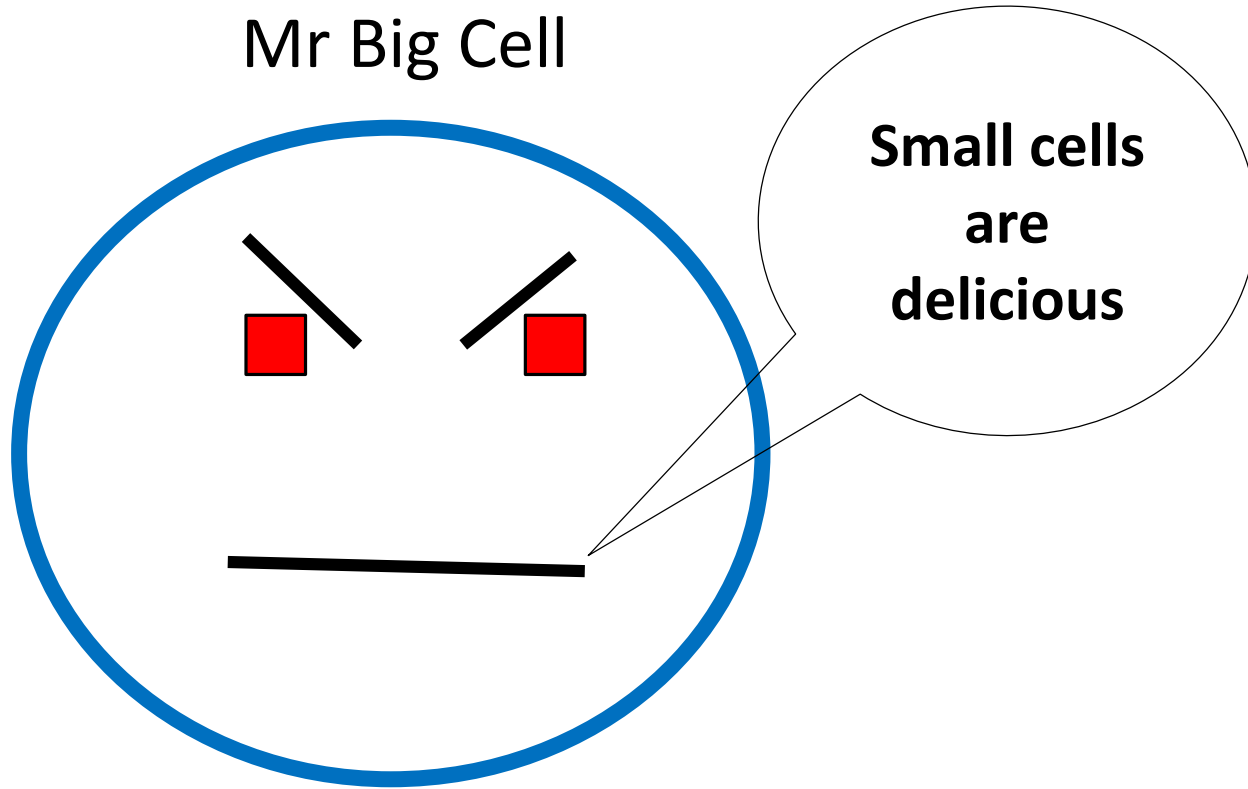
They get protection by living inside the hydra and can use his waste

The hydra gets extra food if there are less prey to eat

Remember the story of Mr. big cell &
Mr. small cell?

Endosymbiosis

Mr Big Cell

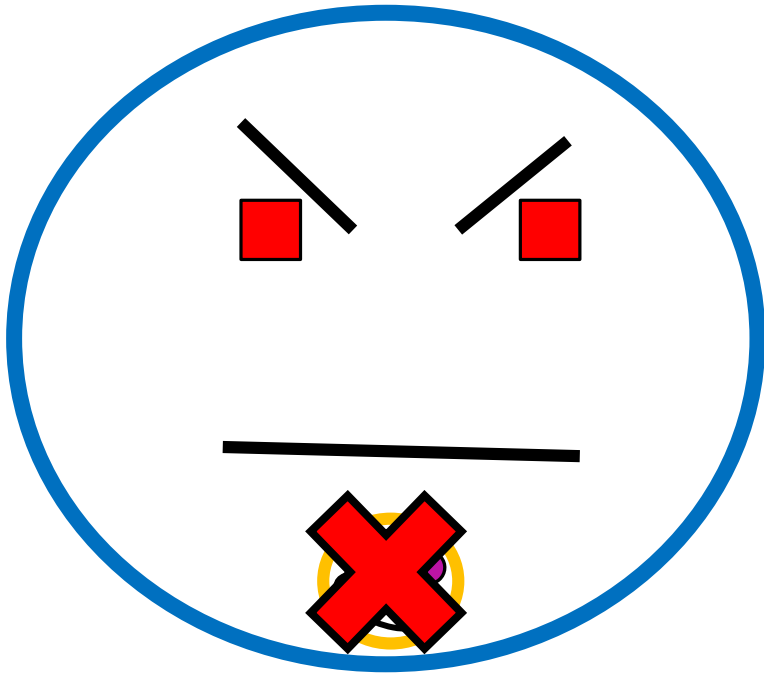


Mr Small cell



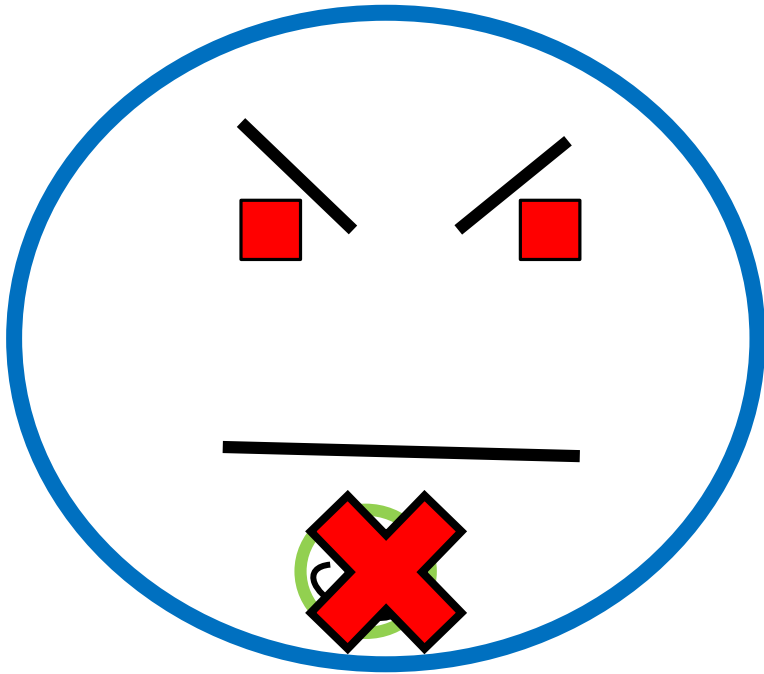
Endosymbiosis

Mr Big Cell



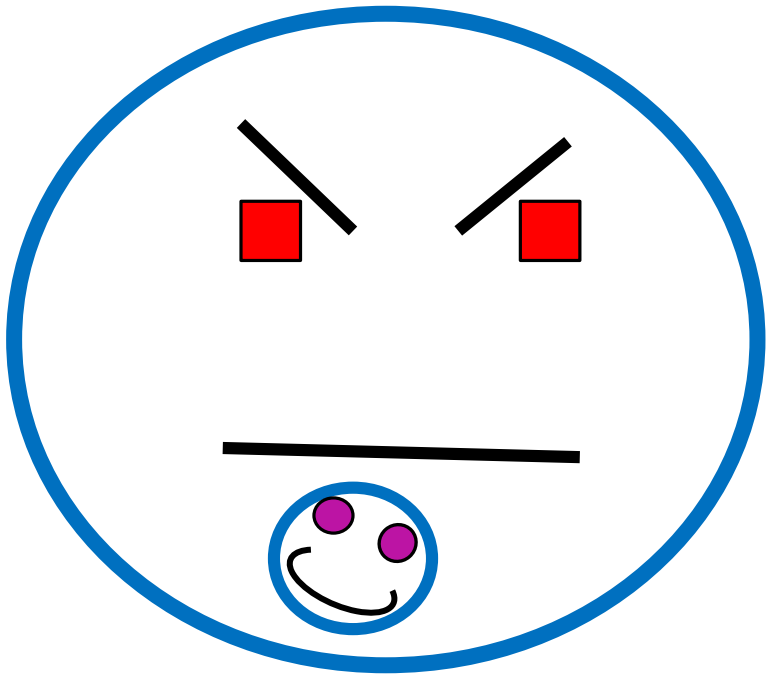
Endosymbiosis

Mr Big Cell



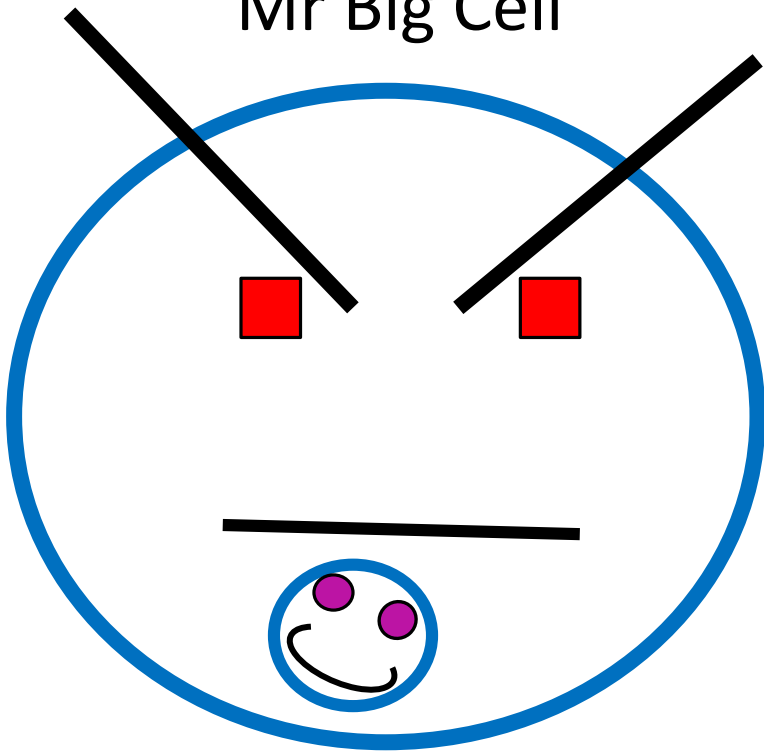
Endosymbiosis

Mr Big Cell

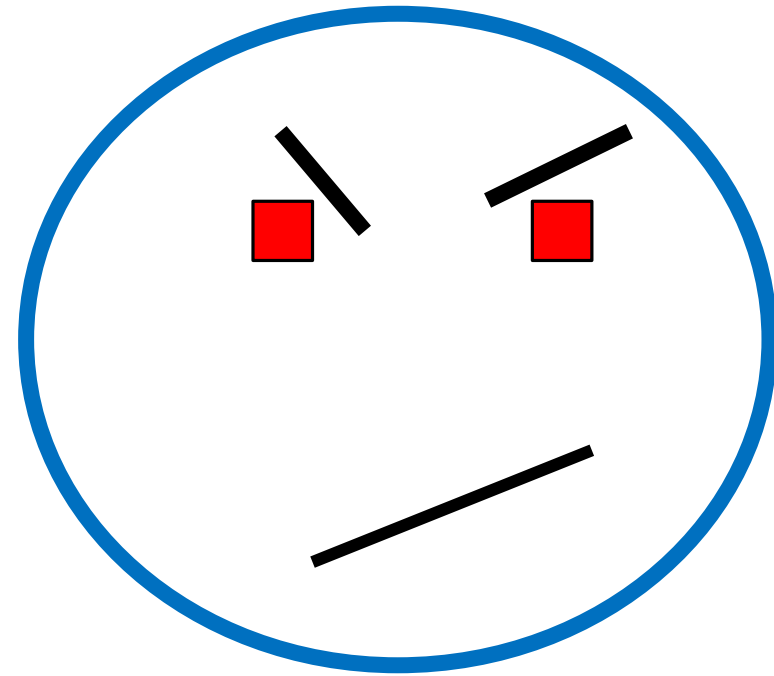


Endosymbiosis

Mr Big Cell



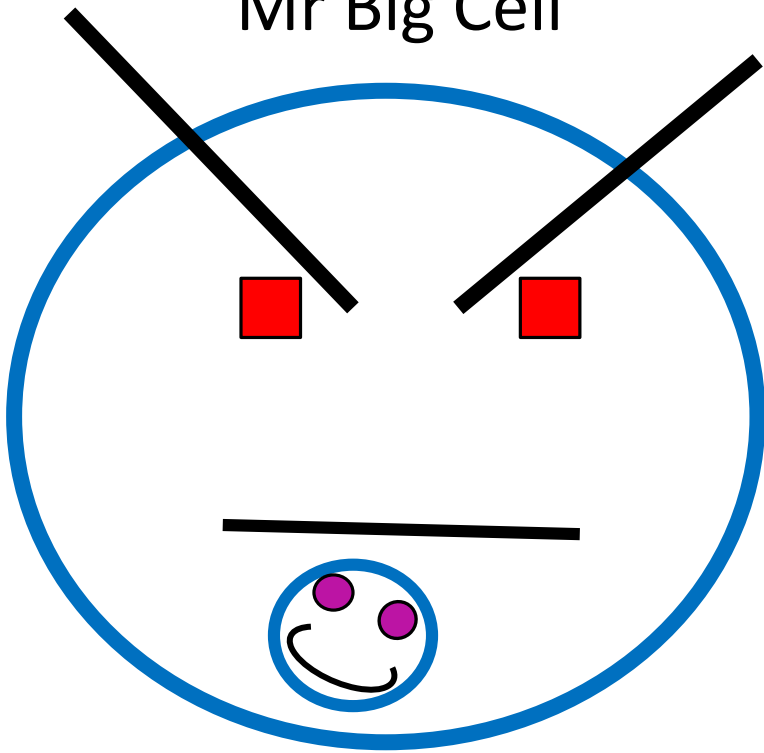
Mr Large Cell



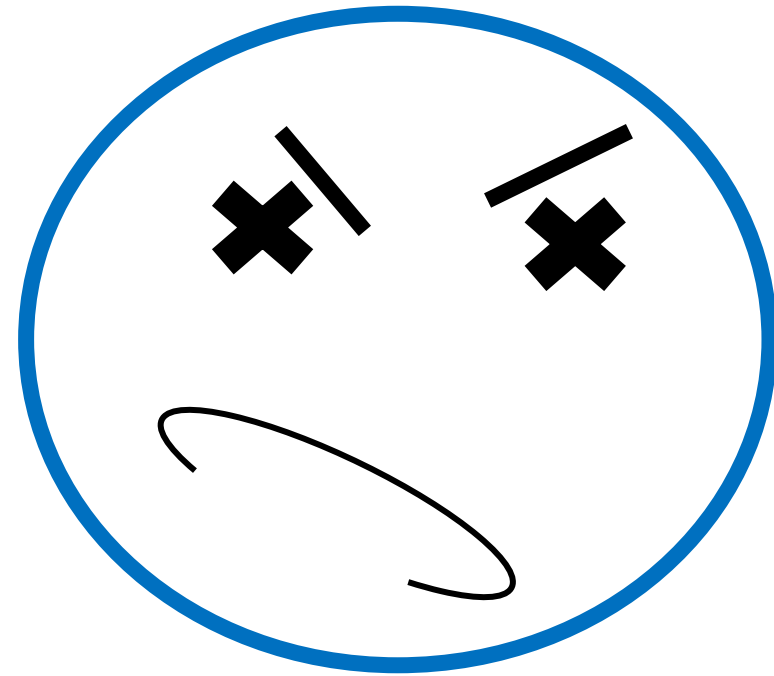
Because of competition between predators there are almost no small cells to eat

Endosymbiosis

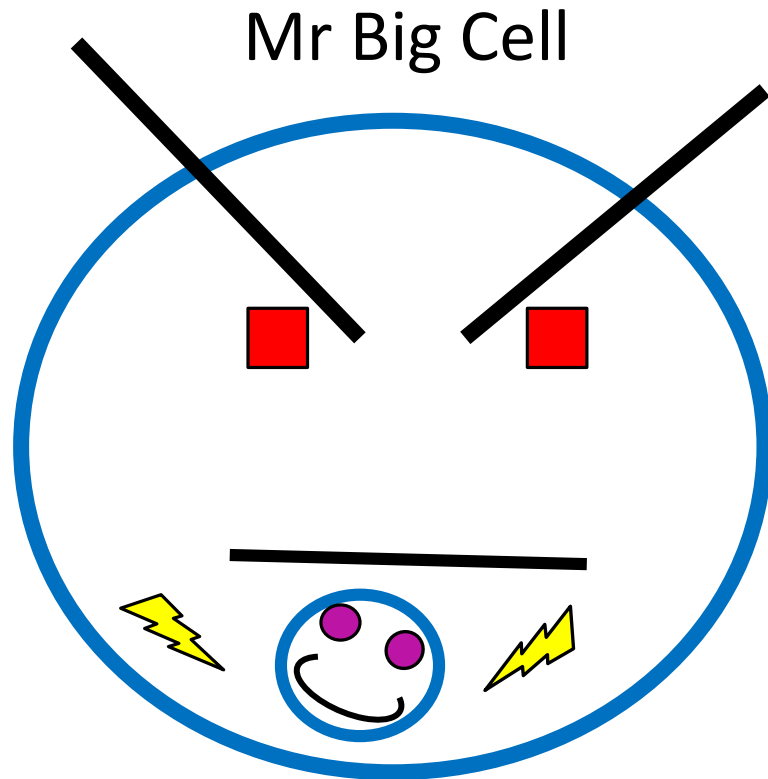
Mr Big Cell



Mr Large Cell



Endosymbiosis

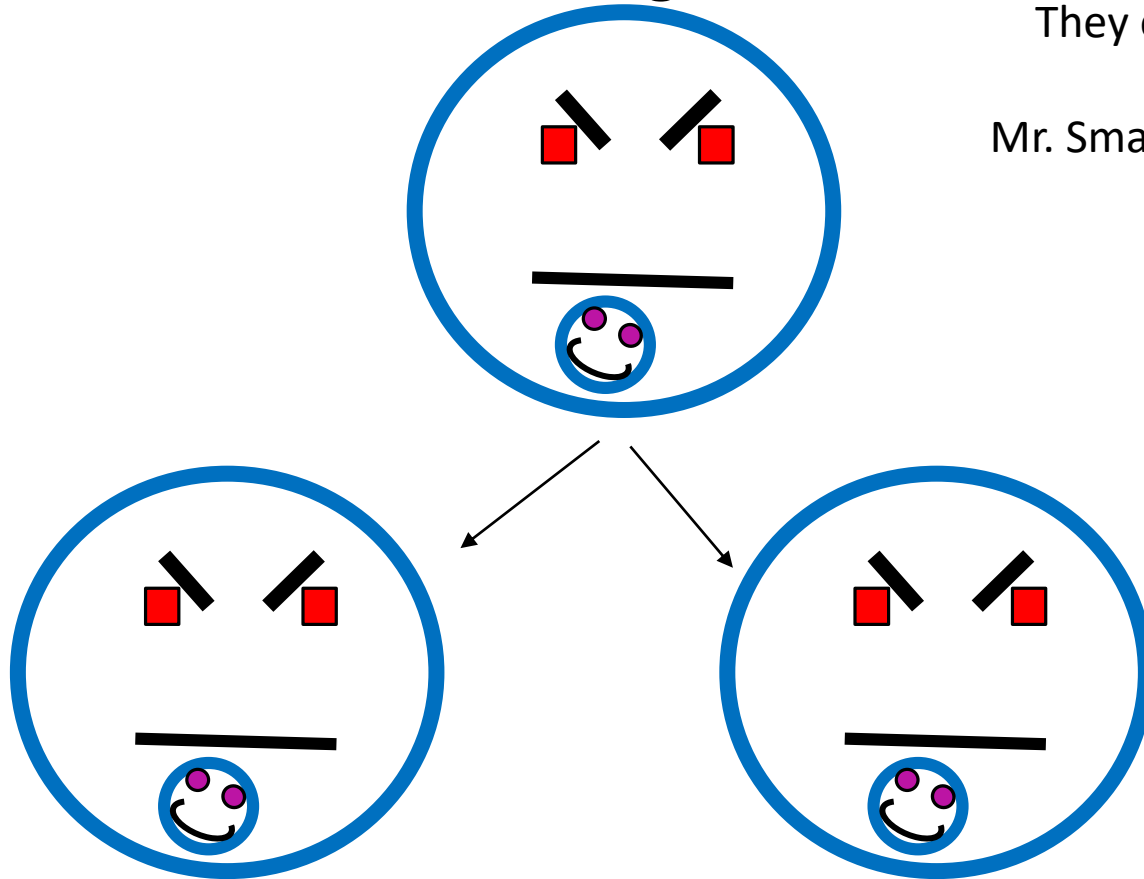


Mr Small cell is producing energy, allowing Mr. big cell to survive

They're symbiotic, mr big cell gives protection and mr small cell provides energy

Endosymbiosis

Mr Big Cell



They eventually become a new *super organism*

Mr. Small cell becomes a little organ or an *organelle*

Coming back to our Ecosphere



What you need





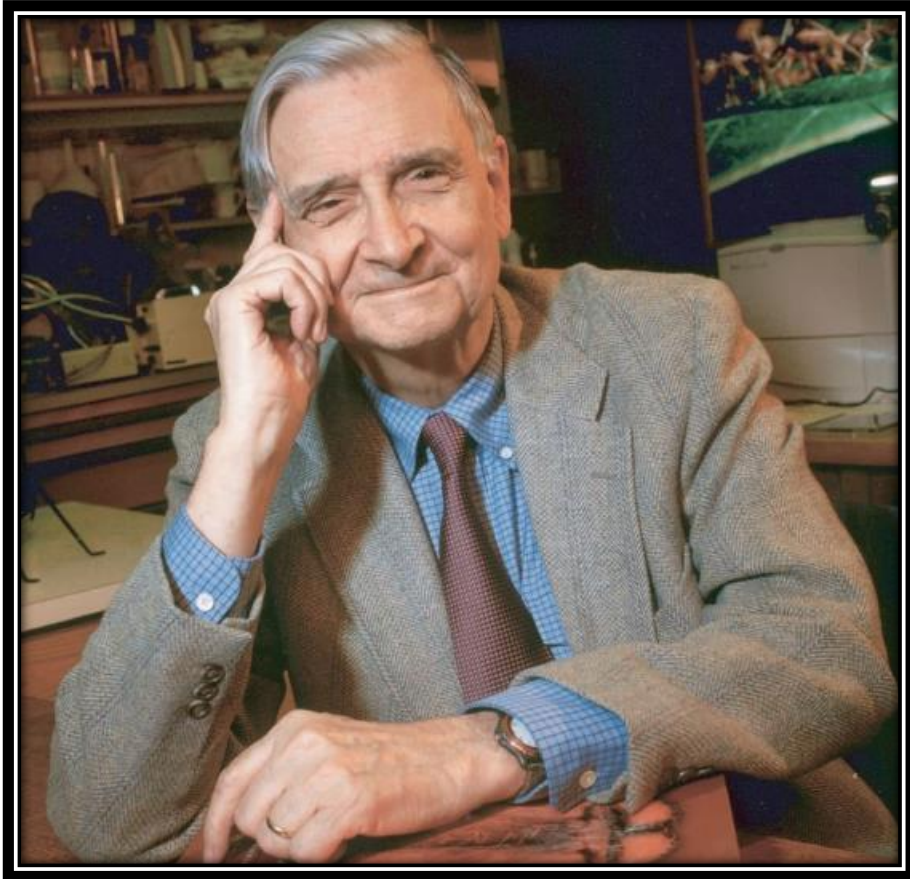
IMPORTANT!

- 1) Don't seal the lid completely, leave a little space so that air can move in and out
- 2) Don't use a brown / green or dark bottle – This will limit the organisms that can do photosynthesis
- 3) Put the Jar beside the window so it is in the sunlight. This is so the photosynthesising organisms have plenty of light

You can send pictures to me if you like!

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A message for mums and dads



The **one process** now going on that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us

E.O. Wilson