Worksheet- What are corals?

Fill in the blanks using the keywords:

Thousands - Animals - Polyps - Symbiotic - Tentacles - Photosynthesis - Zooxanthellae

1) Corals are tiny, soft-bodied _Animals_____ related to jellyfish and sea anemones.

2) When viewed close, you can see that corals are made up of __Polyps_____, each one has a mouth, stomach and tentacles. Polyps are generally grouped together by the __Thousands_____, forming large colonies.

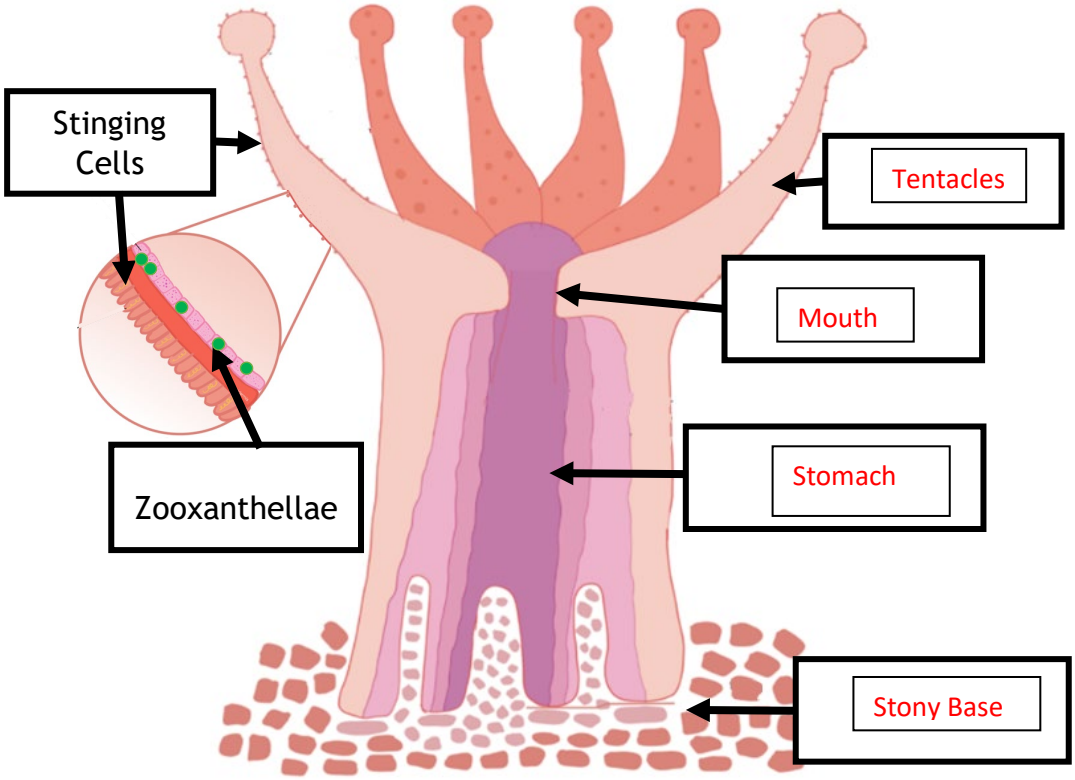
3) Corals often have a _Symbiotic_____relationship with a special type of algae called __Zooxanthellae____ (pronounced 'zoo-zan-thel-ay').

4) Zooxanthellae live inside the cells of the coral and provide up to 95% of the coral's food through _Photosynthesis_. The other 5% of nutrients comes from the coral polyps using their _Tentacles____ to reach out and grab food that floats by in the water column.

Stony Coral Polyp Anatomy

Label the diagram below using the keywords to help you:

Mouth – Tentacles – Stony Base - Stomach



Adaptation on Coral Reefs

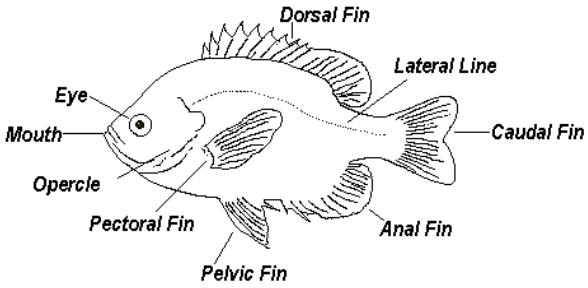
All species have adaptations to help them survive in their environment. Below we have a few examples of some impressive adaptations of some of the species we can find on the reef. Match up the species with its adaptation.

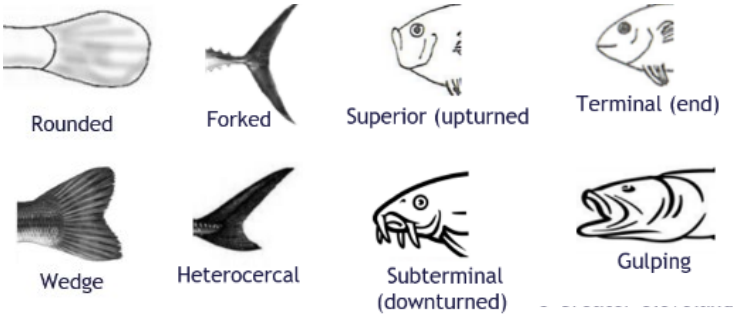
SPECIES	ADAPTATION
 Four-eye butterfly fish	This species is perfectly adapted for hunting at night! Nocturnal (night-active) fish have **large eyes** as an adaptation to low light environments, providing better vision for nocturnal hunters. Red is the first colour to fade at depth. The absence of red light at depth keeps this species concealed from both predators and prey.
 Peacock Flounder	This species has adapted a special camouflage called **countershading**, consisting of a darker colour on the top (dorsal) side of the fish and a lighter colour on the bottom (ventral) side. This helps blend into the dark ocean floor when viewed from above, and the bright sky when viewed from below.
 Squirrel Fish	This species has a streak through its eye and a **false-eye spot** on its body. The spot on its body resembles an eye to deceive potential predators, into thinking the fish is facing a different direction. Eyespots also draw predators' attention away from the body's most vulnerable parts.
 Great star coral	This species is well adapted to **camouflage**/ blend in with the seafloor. It has a flattened body shape and unlike other fish, both of the flounder's eyes are on the same side of its body, pointing upwards to the sky. They also have **chromophores** which allow them to change colour to blend in with the sea floor.
 Caribbean reef shark	This species has a **symbiotic relationship** (close relationship between members of two different species) with tiny algae called zooxanthellae. The zooxanthellae can provide the coral with 90% of its food; in return, the Zooxanthellae is provided with a nice safe home within the coral's tissue.
 Stoplight parrotfish	This species gets its name from its specialized **'beak'** which is used to scrape coral & algae from the reef. This species also has a clever adaptation for sleeping at night, they create a mucus bubble! This stops predators from smelling it out on the reef.

Create a Fish Lab!

- Your mission is to design your own reef fish!
- In the box below, draw your creature and label your diagram with adaptations.
- Adaptations to include:
  - Morphology (Shape)
  - Mouth Type
  - Tail Type
  - Patterns & Markings
  - Colouration
  - Behaviour

* You can even design your own coral species for your fish!





Name your creature:

Describe the characteristics that make your creature well-adapted to life on the reef.

_____

_____

_____

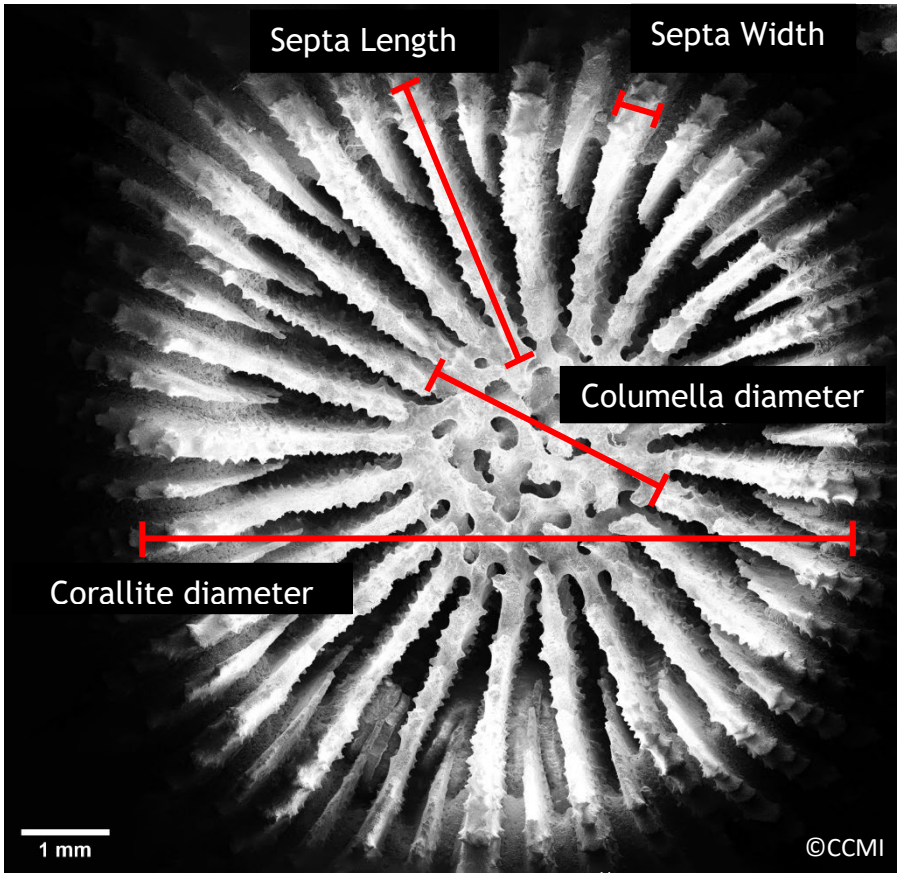
_____

_____

Become a CCMI Marine Biologist: Measurements

As part of CCMI's research, we took small samples of corals across a range of depths to compare the skeletal structure of the corals, to see how corals are adapted to different depths. Scientists used a special microscope called a scanning electron microscope (SEM) to see the detailed skeleton of coral polyps. CCMI's researchers then had to measure the different parts of the coral skeleton. Just like human skeletons have names for different parts like the skull, ribs, and spine, corals have specialized names for the different parts of their skeleton including the columella, corallite and septa.

Below is an example of a great star coral's skeleton labelled with the different parts of a coral skeleton.



Calculate a length using a scale bar:

1. Measure the length of the part of the skeleton in cm.

   Corallite Diameter = 9.6 cm

2. Measure the length of the scale bar in cm.

   Scale bar = 1.2 cm

3. Calculate how many scale bar lengths make the part of the skeleton. (Divide length of specimen by length of scale bar)

   9.6 cm/1.2 cm = 8 mm

Make sure you show your working out

Calculate the actual size of the parts of the coral skeleton. (Estimates-student's results may vary, but their working out should reflect the conceptual understanding)

Corallite Diameter –___9.6 cm/1.2 cm_____= ___8_mm

Columella Diameter –___3.6 cm/1.2 cm_____= ___3_mm

Septa Width–_____.5 cm/1.2 cm_____= _.42_mm

Septa Length –____4 cm/1.2 cm_____= 3.33_mm