



UNIT 3: CORAL ANATOMY



Khaled bin Sultan
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CORAL REEF ECOLOGY CURRICULUM



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This unit is part of the *Coral Reef Ecology Curriculum* that was developed by the Education Department of the Khaled bin Sultan Living Oceans Foundation. It has been designed for secondary school students, but can be adapted for other uses. The entire curriculum can be found online at lof.org/CoralReefCurriculum.

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STANDARDS

- **CCSS:** RST.9-10.2, 4, 5, 7, 8, 9, 10; RST.11-12.2, 4, 8, 10; SL.9-10.4; SL.11-12.4
- **NGSS:** HS-LS1-1
- **OLP:** 5.C.22

ONLINE CONTENTS

- [Coral Anatomy Quiz](#)
- [Coral Anatomy Interactive](#) (at bottom of *Coral Anatomy* section) Use the interactive program to learn and explore more about the anatomy of a stony coral polyp.
- [What Are Corals? Video](#) Corals are animals. An individual coral's body, called a polyp, is mostly stomach, with a mouth on top. Its mouth is ringed with tentacles - but these just aren't any tentacles, they're lined with stinging cells, some filled with venom (neurotoxins) that paralyze their prey.
- [Form Fits Function Video](#) Ever heard the phrase form fits function? It's when the shape of something is designed for the job it is supposed to do. When applied to sea creatures it means their body parts are a good match for their role in the animal's survival.

CORAL ANATOMY

This lesson is a part of the *Coral Anatomy* unit, which explains some of the characteristics and structures of corals, and how they function. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. [Background Information](#)

- Coral Anatomy
- Form Fits Function

B. Lessons

[Watch it! What Are Corals?](#)

- A worksheet to accompany the [What Are Corals?](#) video

[Watch it! Form Fits Function](#)

- A worksheet to accompany the [Form Fits Function](#) video

[Interactive Coral Polyp](#)

- A worksheet to label the structures of a coral polyp and describe their function

[Fitting the Function](#)

- A crossword puzzle to match the coral structures to their function

[Coral Anatomy Quiz](#)

- A matching quiz to match the coral structures to their function

[Coral Polyp Eco-Art](#)

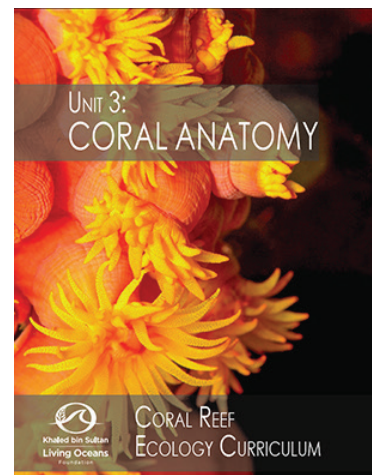
- An art project to design and build a coral polyp using recycled materials

[Form Fits Function](#)

- A lesson to design a poster of any plant or animal, labeling the parts and their functions

[Read it! Swimming Among Soft Corals](#)

- A worksheet to accompany the [Swimming Among Soft Corals of the Great Barrier Reef](#) field blog



BACKGROUND INFORMATION

A) CORAL ANATOMY

All living things have a specific anatomy. **Anatomy** stems from the Greek words:

ana
up

tomia
cutting

Anatomy means to *cut up*. The word is defined as the study of the body including cells, tissue, organs, and systems. In order to study body structures, one must *cut up* the organism.

In this unit, we are going to learn about some of the characteristics and structures of corals, and how they function.

We have discovered that corals are animals that reside in the Phylum **Cnidaria**. They are considered invertebrates. What is an **invertebrate**? Invertebrates are animals that do not have a spinal column or backbone.

In *Unit 2: Classification*, we learned that organisms in the Phylum Cnidaria can have one of two body forms: **medusa** or **polyp**. Corals have a polyp body form (figure 3-1). Often coral polyps live in colonies where there are hundreds to thousands of polyps present. However, there are solitary corals as well.

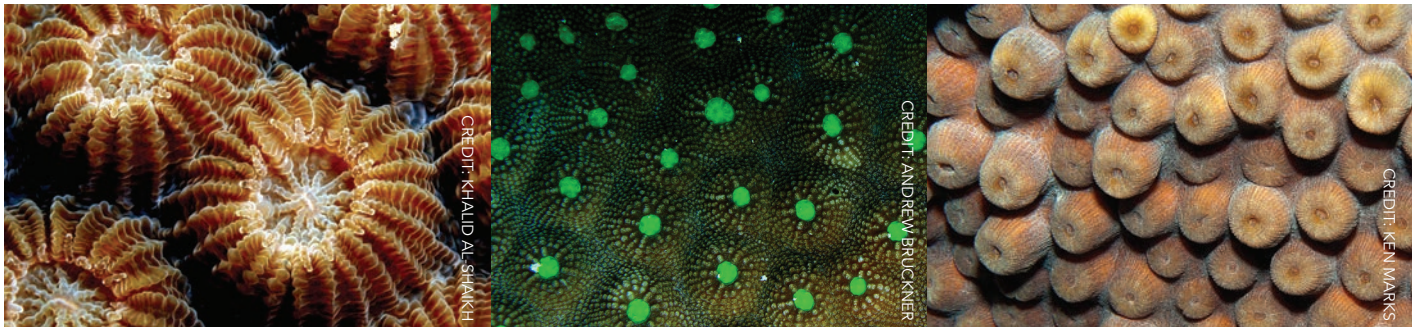


FIGURE 3-1. Photos of different colonial coral polyps where each *circle* is an individual animal.

Let's take a look at a mushroom coral (figure 3-2a). This coral is one giant polyp that can grow up to 20 inches (50 centimeters) or more in diameter. Now let's look at a brain coral (figure 3-2b). There are thousands of colonial polyps on this one coral. Each polyp may range from just millimeters in size to around 4 inches (10 centimeters) in diameter. Needless to say, in any given coral, polyps come in different quantities and sizes.

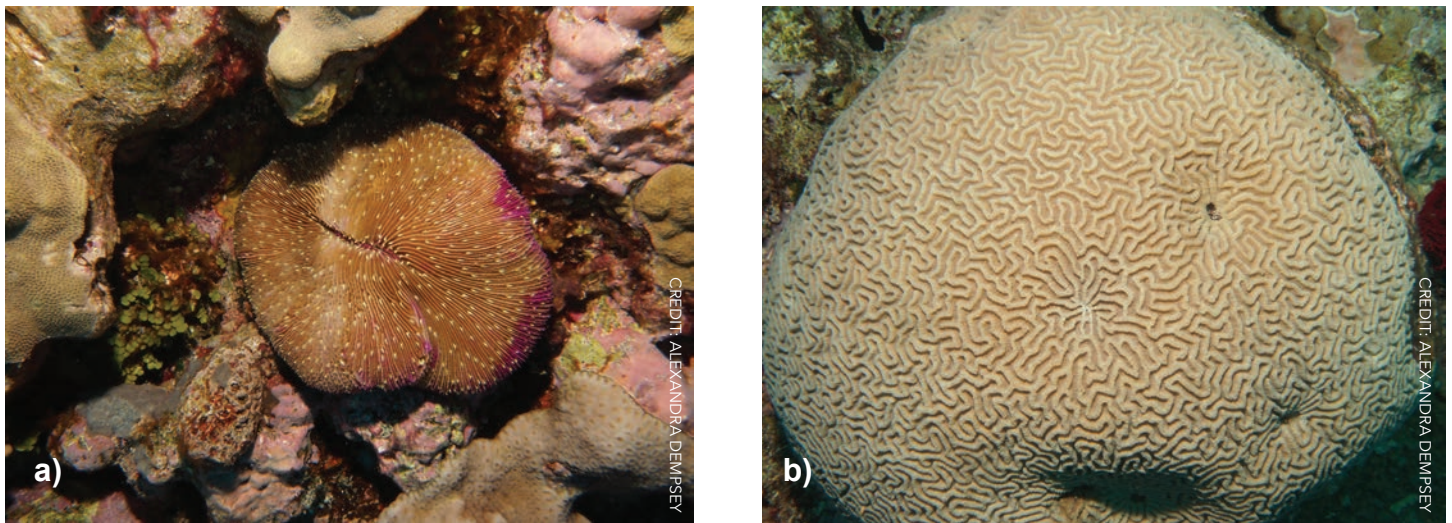


FIGURE 3-2. a) Solitary mushroom coral; b) Colonial brain coral containing hundreds of coral polyps

Use the *Coral Polyp* interactive program to learn and explore more about the anatomy of a stony coral polyp. You can find the interactive at the bottom of the *Coral Anatomy* tab at: <http://www.lof.org/education/portal/course/coral-anatomy/>.



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FIGURE 3-3. *Coral Polyp* interactive

B) FORM FITS FUNCTION

Have you ever heard of form fits function? It means that organisms and/or their structures are designed to perform a particular function(s). Let's take a closer look at a coral polyp. Most corals are sessile meaning they can't move, so they can't actively travel to find prey. Do you think it's appropriate that **tentacles** fit the saying form fits function?

The answer is yes. Unless a coral polyp has an elastic, expandable **mouth**, it's not going to be able to use its tiny mouth to catch prey without its tentacles.

Let's look at another example. Describe the teeth and mouth of a great white shark. Large, serrated, sharp teeth arranged in multiple rows, and a large expandable jaw, right? This must be good for eating seaweed. **WRONG!** Great white sharks have all those large, serrated, sharp teeth to consume large marine mammals and fish. They are large fish and they need a lot of energy to survive. Seaweed isn't going to cut it for these guys. Just like corals, the mouth on a great white shark follows *form fits function*.



FIGURE 3-4. Great white shark jaw with serrated teeth

ATTRIBUTION

Figure 3-4. By Bone Clones (Bone Clones) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)], 18 November 2014 via Wikimedia Commons. <https://commons.wikimedia.org/wiki/File%3ABC-095-Great-White-Jaw-r2-Lo.jpg>.

CORAL REEF ECOLOGY CURRICULUM

The Coral Reef Ecology Curriculum is a comprehensive educational resource designed to educate people about life on coral reefs. Developed by educators and scientists at the Khaled bin Sultan Living Oceans Foundation, this curriculum strives to increase ocean literacy by creating awareness about coral reefs, the threats they face, and how people can help to preserve these diverse ecosystems.



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The Khaled bin Sultan Living Oceans Foundation is a US-based nonprofit environmental science organization. The Foundation was established to protect and restore the world's oceans through scientific research, outreach, and education.