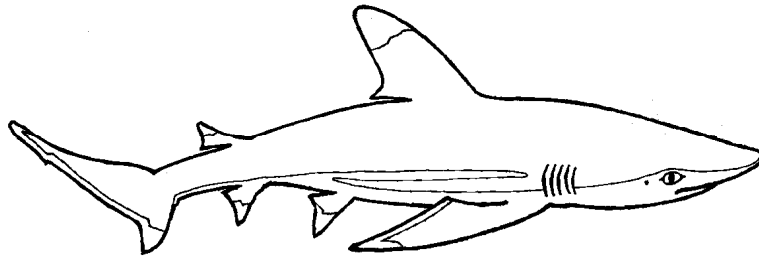


## What's in a Name?



### Topics

Sharks, Scientific Names

### Grades

6-8

### Site

Indoors

### Duration

40 minutes

### Materials

For each student

- **What's in a Name? Translation Sheets**
- Notebooks or paper, pencils

For the class

- Dictionaries containing prefix and suffix definitions
- What's in a Name? Shark Photographs
- Monterey Bay Aquarium Animal Guide (online)

### Vocabulary

genus, species

### National Science Education Standards

*Life Science (K-4)(5-8)*

Characteristics of organisms  
Diversity and adaptations of organisms

*History and Nature of Science (K-4)(5-8)*

Science as a human endeavor

### Overview

*Why do living things have scientific names? What do those names mean? Using a prefix and suffix chart, students will "translate" the scientific names of a number of species of sharks and then draw an image of the shark based upon their "translation." Finally, they will compare their drawings with images provided by the teacher.*

### Objectives

Students will be able to:

- Explain how scientists use genus and species to name living things.
- Understand that scientific names often describe a living thing's appearance, behavior or habitat.
- Identify the importance of scientific names.

### Background

People often call many plants and animals by a variety of common names, depending on geographical location, language and other factors. Using various common names for the same **species** or the same common name for different species can result in confusion when discussing an individual organism. As a result, scientists use scientific names when they refer to living things.

Scientific names are also known as taxonomic names. Taxonomy is the science of processing and naming living organisms. The roots of taxonomy are from a Swedish botanist named Karl von Linné (also known by his Latin name, Carolus Linnaeus) who devised a binomial system for assigning two-part scientific names to plants and animals. The Linnaean system designates each living thing with a genus and species name. The genus is the more general term. There are often multiple species within one genus. Genera (the plural of genus) are further categorized within families, orders, classes, phyla and finally kingdoms.

The first part of the scientific name is the **genus**, which describes a group of plants or animals with similar characteristics. For example, the genus of zebra sharks is *Stegostoma*. The genus name is always capitalized and may be abbreviated, *S.*



## VOCABULARY

**Genus:** describes a group of plants or animals with shared characteristics

**Species:** plants or animals within a genus that can interbreed, also the smallest group in classification

The second part of the name refers to the **species**, a specific group of plants or animals within the genus. Species names are written in lowercase and are always used with the genus names, as species names may occur in other genera. Examples of scientific names for zebra sharks include *Stegostoma carinatum* and *S. fasciata*.

Scientific names are usually made up of Latin or Greek words, prefixes and suffixes, that often describe the appearance or behavior of the animal. The names also tell something about the animal's relationship to other animals or may name people who were instrumental in the discovery of the animal.

Besides establishing a common language, scientific names allow for a quick and general understanding of a species natural history. Also, more than 2 million living species have been identified by the scientific community. Scientists estimate that there may be 10 to 50 million other species unidentified. Scientific names allow us to organize newly identified species as well as to take note when a species disappears or is threatened.

## Procedure

### 1. DISCUSS THE IMPORTANCE OF SCIENTIFIC NAMES WITH STUDENTS .

*Common names vary by scope and region . For example, "deer" refers to 34 individual species. There is a fish that is called Mahi mahi in one region and Dorado in another region. Using the fish's scientific name of Coryphaena hippurus ensures people are communicating about the same species. That is because scientific names are international and remain the same in any language.*

### 2. STUDENTS REVIEW PARTS OF SPEECH AND EXAMINE EXISTING SCIENTIFIC NAMES.

You may choose to review root words, prefixes or suffixes with students. Then share some examples of local or Aquarium animals and corresponding scientific names.

### 3. STUDENTS PRACTICE "TRANSLATING" SCIENTIFIC NAMES INTO ROOT WORDS, PREFIXES OR SUFFIXES..

Pass out **What's in a Name? Translation Sheets**. Challenge students to decode the Latin and Greek parts of each scientific name and hypothesize the sharks' common names. You may choose to do an example with the whole class.

### 4. STUDENTS CHOOSE ONE SHARK SPECIES TO ILLUSTRATE.

Encourage students to choose one shark and illustrate it with as much detail as possible using their "translation" of its scientific name.

### 5. STUDENTS RESEARCH SHARK SPECIES AND REVISE ORIGINAL ILLUSTRATION.

Have students gather information about their shark and then compare their illustration to a photograph or other illustration of that animal. If possible, have students visit an aquarium or use Monterey Bay Aquarium's web cam to view their actual shark. Have students revise and label their illustrations.

### 6. STUDENTS SHARE THEIR ILLUSTRATIONS IN A "GALLERY WALK."

Have students post their illustrations with the scientific and common name of their shark. They then can walk around and observe the illustrations writing observations in a notebook. *How do the common names compare to the meanings of the scientific names? How did you do with your guesses?*



## ELL TIPS

Use the attached Family Discovery Event table label to engage families in their child's learning. Family support is essential for all learners' success. Events for families introduce potentially new concepts and methods that can be applied to many of their childrens' academic studies.

**7. AS A CLASS, REVISIT THE IMPORTANCE OF SCIENTIFIC NAMES.**

*How did the prefixes and suffixes help your illustrations? Why are scientific names important? (common language, organization of new species, quick and general understanding of a species natural history, recognize when species “disappear” or become threatened)*

## Extensions

- Challenge students to imagine themselves as scientists responsible for proposing new scientific names for three animals they’ve seen at an aquarium or other site. In partners, have them use the Latin and Greek terms from the translation sheet and make up “scientific names” identifying their animals. Have student partners trade and try to guess which animal goes with each name.
- Give students modeling clay to use to design a new shark species. Have them select prefixes and suffixes to create the body parts and coloration. Then have classmates try to name each other’s sharks.

## Resources

### Websites

*Monterey Bay Aquarium.* [www.montereybayaquarium.org](http://www.montereybayaquarium.org)

Use the online Animal Guide to learn about other animals featured at the Aquarium and their scientific names.

*Fish Base.* [www.fishbase.org](http://www.fishbase.org)

Find information on more than 28,000 fish species with scientific and common names.

*Palomar College.* [anthro.palomar.edu/animal/](http://anthro.palomar.edu/animal/)

Provides an introductory overview of the history of taxonomy and how living things are classified today.

### Recommended Books

*Sharks.* Berger, Melvin, and Gilda Berger. Scholastic, 2003.

*Sharks and Rays of the Pacific Coast.* Ferguson, Ava, and Gregor Cailliet. Monterey Bay Aquarium, 1990.

## Standards

### California Science Standards

Grade 3: 3a, b; 5e

Grade 6: 5d

Grade 4: 3a, b; 6a

Grade 7: 3a, d, e; 5a; 7d

Grade 5: 6a

### English Language Arts

Reading

Written and Oral English Language Conventions

Listening and Speaking



## CONSERVATION TIPS

There are many misconceptions about sharks. Out of nearly 400 species, only six are potentially dangerous to humans. However, humans kill up to 100 million sharks a year. Help students break down their stereotypes about “killer” sharks and talk about how damaging those misconceptions can be.

---

















**THE MISSION OF THE  
MONTEREY BAY  
AQUARIUM  
IS TO INSPIRE  
CONSERVATION OF THE  
OCEANS.**

---

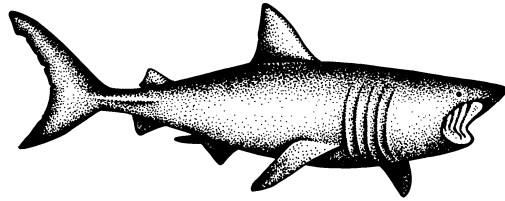
**What's in a Name?  
Translation Sheet  
Answer Key**

Scientific Name	"Translation"	Common Name
<i>Carcharhinus melanopterus</i>	sharp nose, with black fin	Blacktip reef shark
<i>Carcharhinus galapagensis</i>	sharp nose, Galapagos	Galapagos shark
<i>Cephaloscyllium ventriosum</i>	swollen head, large belly	Swell shark
<i>Galeorhinus galeus</i>	shark nose, shark	Soupfin shark
<i>Haploblepharus sp.</i>	single eyelid, species undefined	Puffadder shyshark
<i>Hemiscyllium sp.</i>	half swollen	Epaulette shark
<i>Heterodontus francisci</i>	different tooth	Horn shark
<i>Notorynchus maculatus</i>	back snout, spotted	Sevengill shark
<i>Poroderma africanum</i>	spotted skin, Africa	Pajama catshark
<i>Sphyrna lewini</i>	hammer	Scalloped hammerhead
<i>Squalus acanthias</i>	kind of sea fish, prickly	Spiny dogfish
<i>Squatina californica</i>	kind of shark, California	Pacific angel shark
<i>Stegostoma varium</i>	covered opening, varied	Zebra shark
<i>Triaenodon obesus</i>	tri-toothed, fat	Whitetip reef shark
<i>Triakis semifasciata</i>	three points, partly banded	Leopard shark

## What's In A Name? Shark Photographs

<p><b>Blacktip reef shark</b></p> 	<p><b>Pacific angel shark</b></p> 	<p><b>Epaulette shark</b></p> 	<p><b>Galapagos shark</b></p> 
<p><b>Horn shark</b></p> 	<p><b>Leopard shark</b></p> 	<p><b>Scalloped hammerhead</b></p> 	<p><b>Spiny dogfish</b></p> 
<p><b>Swell shark</b></p> 	<p><b>White shark</b></p>  <p><small>© Monterey Bay Aquarium/Randy Wilder</small></p>	<p><b>Soupin shark</b></p> 	<p><b>Puffadder shyshark</b></p> 
<p><b>Zebra shark</b></p> 	<p><b>Whitetip reef shark</b></p> 	<p><b>Pajama catshark</b></p> 	<p><b>Sevengill shark</b></p> 

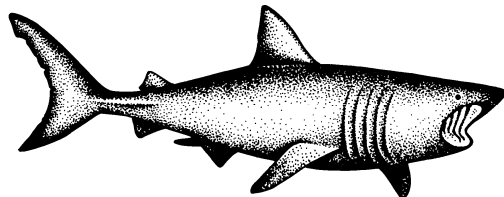
**Family Event Table Label**



**What's in a Name?**

1. Look at the chart with the scientific names. Match the root words with their translations using the key on the poster.
2. Guess the common name of each shark using the translation of their scientific name.

\*Use the shark pictures, information and dictionary for help.



**¿Qué Contiene un Nombre?**

1. Observe el diagrama con los nombres científicos. Use la leyenda en el cartel para escoger parejas entre las palabras raíces y sus traducciones.
2. Adivine el nombre común de cada tiburón usando la traducción del nombre científico.

\*Use las fotos, información y el diccionario para ayuda.

## What's In a Name? Translation Sheet

You may have heard people use the phrase, "It's all Greek to me." In the case of scientific names, that's often true! Scientists use Greek and Latin terms to create scientific names for different living things. The scientific name may provide information about where an animal lives and its appearance or behavior. It may include the name of the person who discovered the organism or someone the "discoverer" wanted to honor.

Scientific names consist of two parts; genus and species. Organisms of the same species, such as two different breeds of domestic dogs, can mate and their offspring will be able to reproduce. Organisms with the same genus are related, such as domestic dogs, *Canis familiaris*, and gray wolves, *Canis lupis*. But if they were to mate and produce offspring, their offspring would not be able to reproduce.

In this activity, you'll be looking at the scientific names of various sharks. Your job is to "translate" the scientific names of the sharks using the below chart of Latin and Greek terms.

**For example:** *Carcharhinus melanopterus*  
*Carch* means sharp and *rhinus* means nose.  
*Melan* means dark or black and *pter* means wing or fin.  
 So a *Carcharhinus melanopterus* has a sharp nose and black fins.  
 This shark's common name is Blacktip reef shark.

Latin or Greek	Meaning
Akis	pointed
Acanthias	prickly thing
Blephara	eyelid
Californi	near California
Carch	sharp, pointed
Cephal	head
Derm	skin
Fasci	banded, striped
Galapagensis	from Galapagos
Galeo	shark
Haplo	single
Hemi	half
Hetero	different
Maculo	spotted
Melan	dark, black
Noto	back

Latin or Greek	Meaning
Obesus	fat
Odous/Odon	teeth
Poro	having spots or openings
Pter	wing, fin
Rhino	nose
Scyllium	swollen
Semi	half, partly
Sphyrna	hammer
Squalus	kind of sea fish
Squatina	kind of shark
Stego	covered
Stoma	opening
Tri	three
Varium	varied
Ventr(i)	belly, stomach

## What's In a Name? Translation Sheet

Name \_\_\_\_\_

Scientific Name	"Translation"	Common Name
<i>Carcharhinus melanopterus</i>		
<i>Carcharhinus galapagensis</i>		
<i>Cephaloscyllium ventriosum</i>		
<i>Galeorhinus galeus</i>		
<i>Haploblepharus sp.</i>		
<i>Hemiscyllium sp.</i>		
<i>Heterodontus francisci</i>		
<i>Notorynchus maculatus</i>		
<i>Poroderma africanum</i>		
<i>Sphyrna lewini</i>		
<i>Squalus acanthias</i>		
<i>Squatina californica</i>		
<i>Stegostoma varium</i>		
<i>Triaenodon obesus</i>		
<i>Triakis semifasciata</i>		