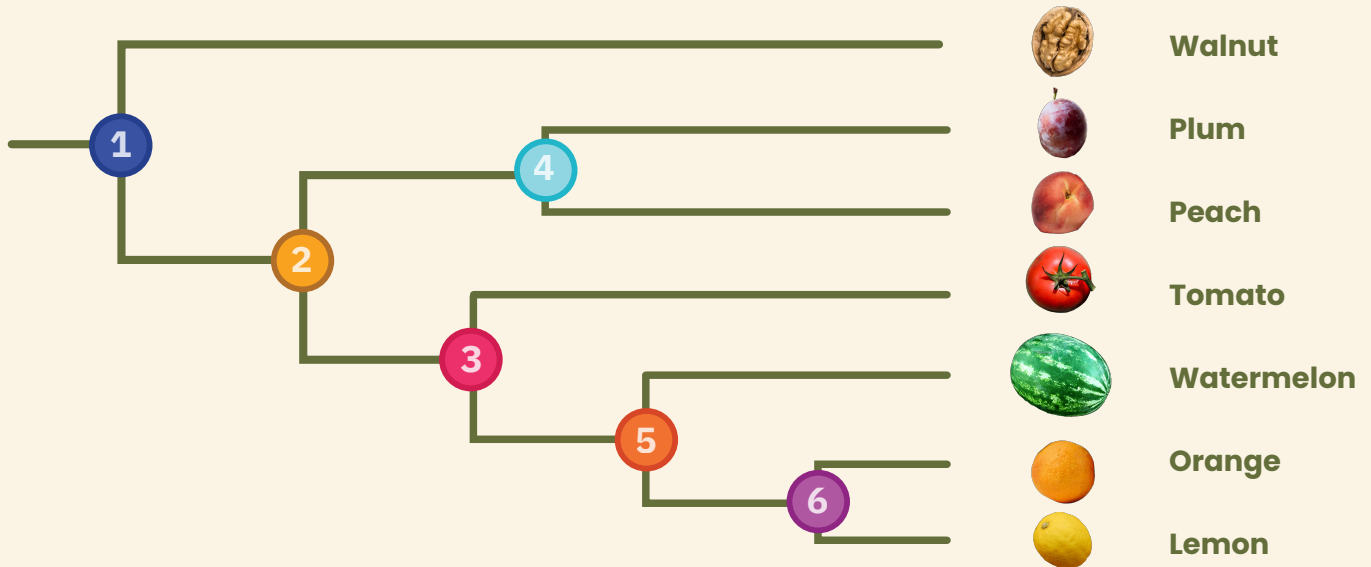


How to Read a Simple Cladogram

Cladograms are a way to organize things by what they have in common. They are a tool scientists use to understand how things are similar and different. Here's a simple cladogram showing how fruit could be organized on a cladogram based on similarities and differences.



1

THIS NODE = SEEDS PRESENT

Which fruits have seeds?
A walnut, plum, peach, tomato, watermelon, orange, and lemon.

GO TO NODE #2.

2

THIS NODE = SOFT INSIDE

Which fruits are soft inside?
A plum, peach, tomato, watermelon, orange, and lemon.
Which fruits is NOT soft inside?
A walnut.

**GET THE IDEA?
GO TO NODE #3.**

3

THIS DOT = SMALL SEEDS

Which fruits have small seeds inside with no large central stone, AND are soft inside?
A tomato, watermelon, orange, and lemon.

**SEE THE PATTERN?
GO TO NODE #4.**

4

THIS DOT = LARGE CENTRAL STONE

Which fruits have a large central stone, AND are soft inside? A plum and peach.

**GETTING ANY EASIER?
GO TO NODE #5.**

5

THIS DOT = THICK SKIN

Which fruits have thick skin, AND have small seeds inside with no large, central stone, AND are soft inside? A watermelon, orange, and lemon.

**ALMOST DONE!
GO TO NODE #6.**

6

THIS DOT = SEGMENTED

Which fruits are segmented, AND have thick skin, AND have small seeds inside with no large, central stone, AND are soft inside?

FIGURE IT OUT!

How to Read The Tree Of Life

This cladogram shows some of the groups of species that make up our diverse planet. Follow the numbers to see how to read the Tree of Life cladogram.

1

THIS NODE = LIFE

All living things have cells that can make copies of their own DNA. Which groups of species on this cladogram are alive? All of them!

GO TO NODE #2.

2

THIS NODE = EUKARYOTES

All eukaryotes have cells with a nucleus that contains most of the cell's DNA. Which groups of species on this cladogram are alive AND are eukaryotes? All these groups EXCEPT for true bacteria.

**GET IT?
GO TO NODE #3.**

3

THIS NODE = BILATERIANS

Some eukaryotes have mirror symmetry; if you draw a line along the length of their body, the right half is a mirror image of the left. These organisms are called bilaterians.

Which groups on the cladogram are alive AND are eukaryotes AND have mirror symmetry? All groups listed on the forking cladogram from mollusks to birds.

**SEE THE PATTERN?
GO TO NODE #4.**

4

THIS NODE = VERTEBRATES

Some living eukaryotes that are symmetrical also have backbones. They are called vertebrates. Which groups of species are alive AND are eukaryotes AND are symmetrical AND have backbones?

**FIGURE IT OUT AND YOU'LL BE
A CLADOGRAM EXPERT!**

