

# Conceptual Biology

## Making Hypotheses

The word science comes from Latin, meaning "to know." The word *hypothesis* comes from Greek, "under an idea." A hypothesis (an educated guess) often leads to new knowledge and may help to establish a theory.

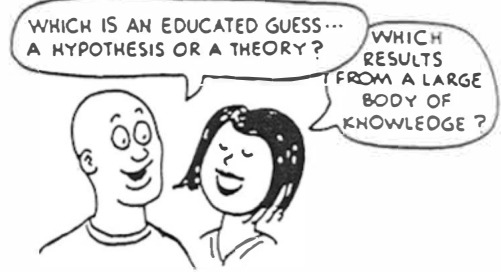
### Examples:

1. It is well known that objects generally expand when heated. An iron plate gets slightly bigger, for example, when placed in an oven. But what of a hole in the middle of the plate? One friend may say the size of the hole will increase, and another may say it will decrease.
  - a. What is your hypothesis about hole size, and if you are wrong, is there a test for finding out?

**Use the word "because within your hypothesis, then think of a way to test your understanding."**

- b. There are often several ways to test a hypothesis. For example, you can perform a physical experiment and witness the results yourself, or you can use the library or internet to find the reported results of other investigators. Which of these two methods do you favor, and why?

**The method used usually depends on the resources immediately available to the investigator.**



2. Before the time of the printing press, books were hand-copied by scribes, many of whom were monks in monasteries. There is the story of the scribe who was frustrated to find a smudge on an important page he was copying. The smudge blotted out part of the sentence that reported the number of teeth in the head of a donkey. The scribe was very upset and didn't know what to do. He consulted with other scribes to see if any of their books stated the number of teeth in the head of a donkey. After many hours of fruitless searching through the library, it was agreed that the best thing to do was to send a messenger by donkey to the next monastery and continue the search there. What would be your advice?

**Books are useful, but they are no substitute for exploring the world in person.**



### Making Distinctions

Many people don't seem to see the difference between a thing and the abuse of the thing. For example, a city council that bans skateboarding may not distinguish between skateboarding and reckless skateboarding. A person who advocates that a particular technology be banned may not distinguish between that technology and the abuses of that technology. There's a difference between a thing and the abuse of the thing.

On a separate sheet of paper, list other examples where use and abuse are often not distinguished. Compare your list with others in your class.