

STEM *Sims*<sup>TM</sup>

# Fuzzy Teeth



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**Do you need an idea for a scientific study?  
Try out one of our ideas or make one of your own.**

**Start learning right now about how bacteria impact your dental health. Take the following brief quiz to see how much you already know about taking care of your teeth. See the bottom of page 4 to check your answers.**

1. What percent of Americans do *not* brush their teeth at least once a day?
  - a. 5%
  - b. 10%
  - c. 18%
  - d. 25%
2. What is the hardest substance in the human body?
  - a. femur bone
  - b. tooth enamel
  - c. sternum
  - d. cranium
3. How many teeth does the typical armadillo have?
  - a. 16
  - b. 32
  - c. 88
  - d. 104
4. The first President of the United State, George Washington had dentures made of wood.
  - a. true
  - b. false
5. The ancients Mayans used shells hammered into the jaw as teeth implants.
  - a. true
  - b. false



## For a Whiter Smile...

Brushing teeth not only improves dental health by removing food particles that may lead to tooth decay, but brushing also increases the whiteness of teeth. Many people spend significant dollars on products or for dental treatments to whiten teeth. To see how brushing affects tooth whiteness, conduct the following experiment.

### Materials Required

- 1- hard-boiled egg
- 1 large cup black, cold brewed coffee
- permanent marker
- toothbrush
- toothpaste

### Procedure

1. Use the permanent marker to draw a line around the egg, separating the egg into two halves.
2. Place the hard-boiled egg into the cup of black, cold brewed coffee. Make sure the coffee does not contain any sugar or cream.
3. Let the egg soak in the coffee for 10 minutes.
4. Remove the egg and place on a solid surface.
5. Apply toothpaste to the toothbrush.
6. Gently brush one side of the egg. Make sure only brush one side of the egg and to not crack the shell.
7. Repeat steps 2 - 6 three more times making sure to only brush the same side of the egg that you brushed in previous steps.
8. Record your results in table 1 below.

Egg Side	Observations
Brushed	
Not Brushed	

### Questions

1. How does the whiteness of the egg on the brushed side compare to the unbrushed side?
2. What implications does this have for you brushing your teeth?

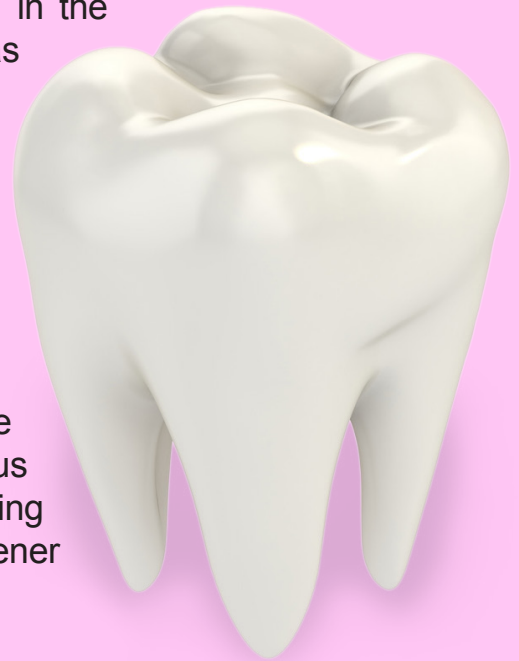
# Fuzzy Teeth

## For a Whiter Smile...

Teeth whitening has become a multi-billion dollars per year business in the United States. The drive for whiter and brighter teeth that match the blinding sparkle of Hollywood stars has reached almost epidemic portions here in this country. However, this is not really a recent desire for whiter teeth and fresher breath – people around the world have been searching for this magic elixir for thousands of years.

Although evidence suggests that early Egyptians, Greeks, and Chinese experimented with various ways to whiten their teeth, the Roman's around 1 A.D. are credited with the first documented teeth whitening product. Their special potion – stale urine. And not just any urine, the best was Portuguese urine. In fact, the Roman emperor Nero placed a tax on the imported urine due to its strong demand in the population. The active ingredient in the stale urine was ammonia, which is an effective cleaner. However, the down side of gargling with urine (besides the horrible taste and bad thoughts associated with rinsing with someone else's urine) is that too much ammonia can eat away at the tooth enamel and can eventually lead to significant cavities and tooth loss.

In the years prior to the mid-1800's, people advocated for vinegar, wine, berries, mint leaves, and even tortoise blood as their whitening mouthwash of choice. Various peroxides, which are still used today in many whitening products were introduced in late 1800's as the tooth whitener that outshines the others.



Please visit the following webpages for more helpful information:

[STEMsims.com](http://STEMsims.com)

**Answers:** Page 2 Answers: 1) d, 2) b, 3) d, 4) b, 5) a. Page 3 Answer: 1) The brushed side should be whiter than the unbrushed side. 2) Brushing teeth regularly makes the teeth whiter.

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