

Effect of pH on Hair Resilience: Answer Key

Part II: Treating hair samples in solutions of varying pH

- The hair sample treated in what pH was the most resilient after treatment? (It was most likely pH 6.0.)
- The hair sample treated in what pH was the least resilient after treatment? (It was most likely pH 12.0.)
- Based on test results, what seems to be the best pH range for hair? (It is most likely pH 6.0-8.0.)
- Describe further research that would better determine the optimal pH range for hair care products. (Answers will vary.)
- How would you answer the central question of the lesson now: How does understanding the chemistry of hair care, including the role of pH, help in the development of better hair care products?

Part III: Online exploration of hair care

- What are some factors that impact the condition of hair? (Examples include length, shampoo, and/or conditioner used.)
- What could be causing your hair to be limp? (Answers could include too long, over-conditioned, or use of basic hair care products, like soap.)
- What are the differences between hair follicles and hair shafts? (A hair follicle is a tiny hole in the skin from which hair grows; the living tissue that makes hair grow is in here. A hair shaft is the part of the hair you see; it is made up of cells that aren't living anymore.)
- When you cut yourself, can your skin heal? If so, why? (Yes, because skin is living tissue.)
- If you damage your hair (e.g., by using the wrong types of hair care products), can it heal? (No, because the hair you see is not living.)
- What is the outermost layer of the hair shaft called? (It is called the cuticle.)
- What is the role of the cuticle? (Its role is to protect the inside of the hair shaft.)
- What happens to cuticles in acidic solutions? (Cuticle cells shrink and harden.)
- What happens to cuticles in basic solutions? (Cuticle cells swell up and soften.)
- What happened to the author's hair when she put it in an acidic solution? In a basic solution? (It was smoother and shinier after having been in the acidic solution.)
- Does that match what happened to your hair in this lesson's activity?
- According to the article, how does shampoo work? (It washes away the oil (sebum) and dirt.)
- Which is better for your hair, detergent or soap? Why? (Detergent is better. Soap solutions are alkaline and make cuticle cells swell up and get rougher, which makes hair dull. Soap may also leave behind soap scum (calcium and magnesium deposits).)
- What does rinsing in acidic solution (e.g., vinegar) do for your hair? (The acid dissolves soap scum and makes cuticles lay flat. This makes hair shiny and smooth.)
- Does this article support the results of your in-class activities? Why or why not?