

Put Proteins on Your Pro Team!

Proteins have two major functions in the body. Some proteins help the body's chemical reactions take place and others help make up important structures in the body such as muscles, cartilage, and tendons. In the following activity, you can experiment with gelatin, which is made from animal cartilage.

Materials:

- Unflavored gelatin
- Water
- Paper or plastic cup
- Teaspoon

Procedures:

1. Cover your work surface with newspaper. Empty the contents of one envelope of gelatin into a cup. Add two teaspoons of water while mixing rapidly with a straw. Continue stirring until the gelatin is well-mixed and thick enough to scoop out with your fingers.
2. Scoop out the gelatin mixture and knead it back and forth between your hands. (Put a little water on your hands so the gelatin will not stick to your hands too much.) Form the gelatin into a ball. Allow the gelatin ball to sit for about 2-3 minutes.
3. Gently squeeze the ball of gelatin. What does it feel like? When you press it, does it go back to its original shape?



4. The outside of your ear is mostly cartilage. Gently bend your ear and let it go. Are there any similarities between your ear and the gelatin ball? Gently push the tip of your nose to the side and let go. Do you think there is cartilage in your nose?
5. How about tendons? Sit in a chair with your feet flat on the floor. Bend down and feel the thick cord behind your ankle. This is your Achilles tendon. Gently press it with your fingers. How does it compare with your gelatin?

Think about this ...

Cartilage, tendons, and ligaments are made of a protein called collagen. Feathers, scales, claws, bird beaks, hooves, horns, and finger nails are made from a protein called keratin. In what ways are the structures made from collagen and the ones made from keratin similar? In what ways are they different?

Where's the Chemistry?

Gelatin is made from the cartilage of cows and pigs. The main protein in cartilage is collagen. The structure of collagen makes it very strong and flexible. This flexibility of collagen gives gelatin the elastic qualities you feel when you squeeze it or press down on it and it bounces back.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

