

Muscular System Hand

Meet Ritu. She's a biomedical engineer that builds machines out of living cells! Today, we're going to design and build a hand that mimics the way that our own musculoskeletal system works.

"Skeletal muscle is anchored to our bones via tendons and stretched across joints. When an electrical signal from our brain tells the muscle to move, it contracts, and we can generate large dynamic motions. My research shows that we can use living skeletal muscle to power robots that move and walk around. These robots are the first of their kind!"

- RITU RAMAN



MATERIALS:

- Pen or pencil
- Cardboard
- Scissors
- Plastic straws or similar tubes
- Yarn or string
- Tape

INSTRUCTIONS:

Important: Have your teacher or grown up help you with any cutting, snipping, or slicing.

1. Trace your hand on a piece of cardboard or heavy paper, then cut it out. If you want, you can fold the places on the hand where your knuckles are.

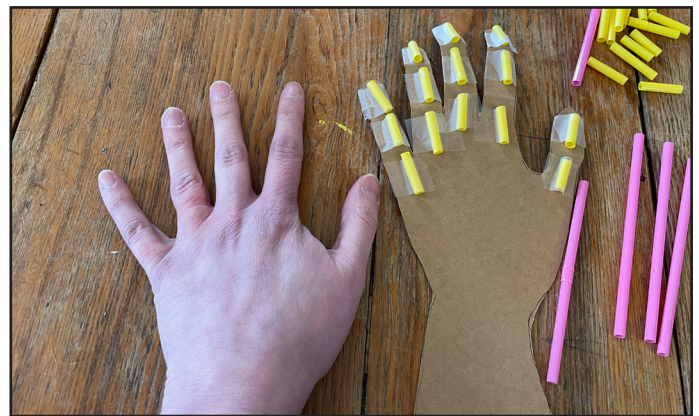


Muscular System Hand Continued

- 2.** Cut your straws into pieces. These will be your “bones.” You’ll need three short pieces for each finger (two for the thumb), and five longer pieces for the hand.



- 3.** Look at your own hand and examine where your bones are. Then tape the short straw segments to your paper hand. See our photo for guidance.



- 4.** Run a piece of yarn or string through each of the fingers and down through the hand bones. Knot or tape them at the top so they don't slip through the straws.



- 5.** Pull the strings. See if you can use the yarn “muscles” to make individual fingers move, or make all the fingers move at the same time.

