

Pumpkin Carving

with UVic Science

*Let's bring a little science to
Halloween this year!*



Dinosaur

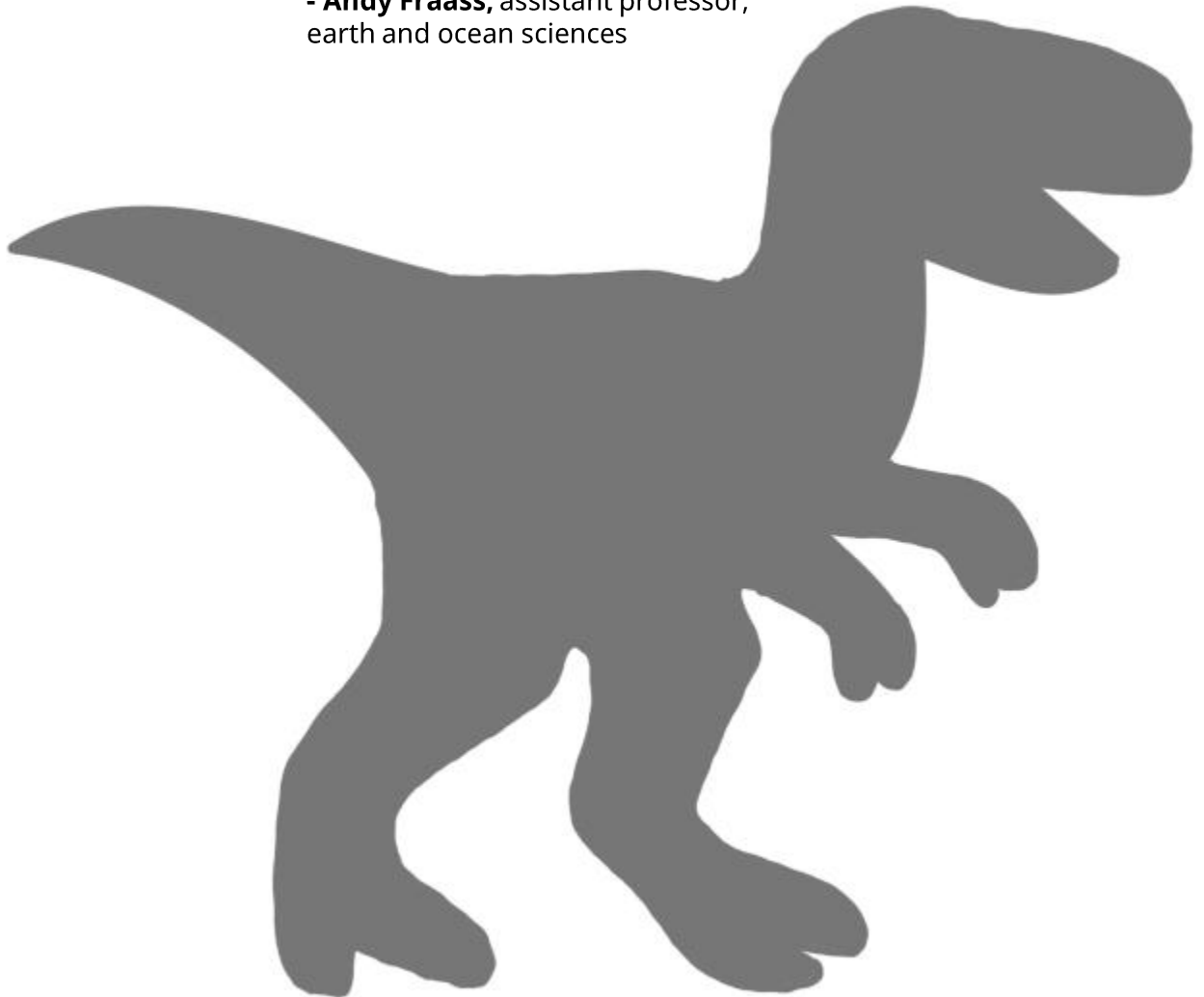


Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.

Fun fact!

Larger dinosaurs like the sauropods probably held a constant-ish internal temperature simply because they were so huge. Most adult sauropods measured between 15 and 35 metres, and their weight ranged from about 20 metric tons to over 80!

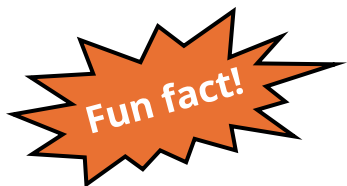
- **Andy Fraass**, assistant professor,
earth and ocean sciences



Potion

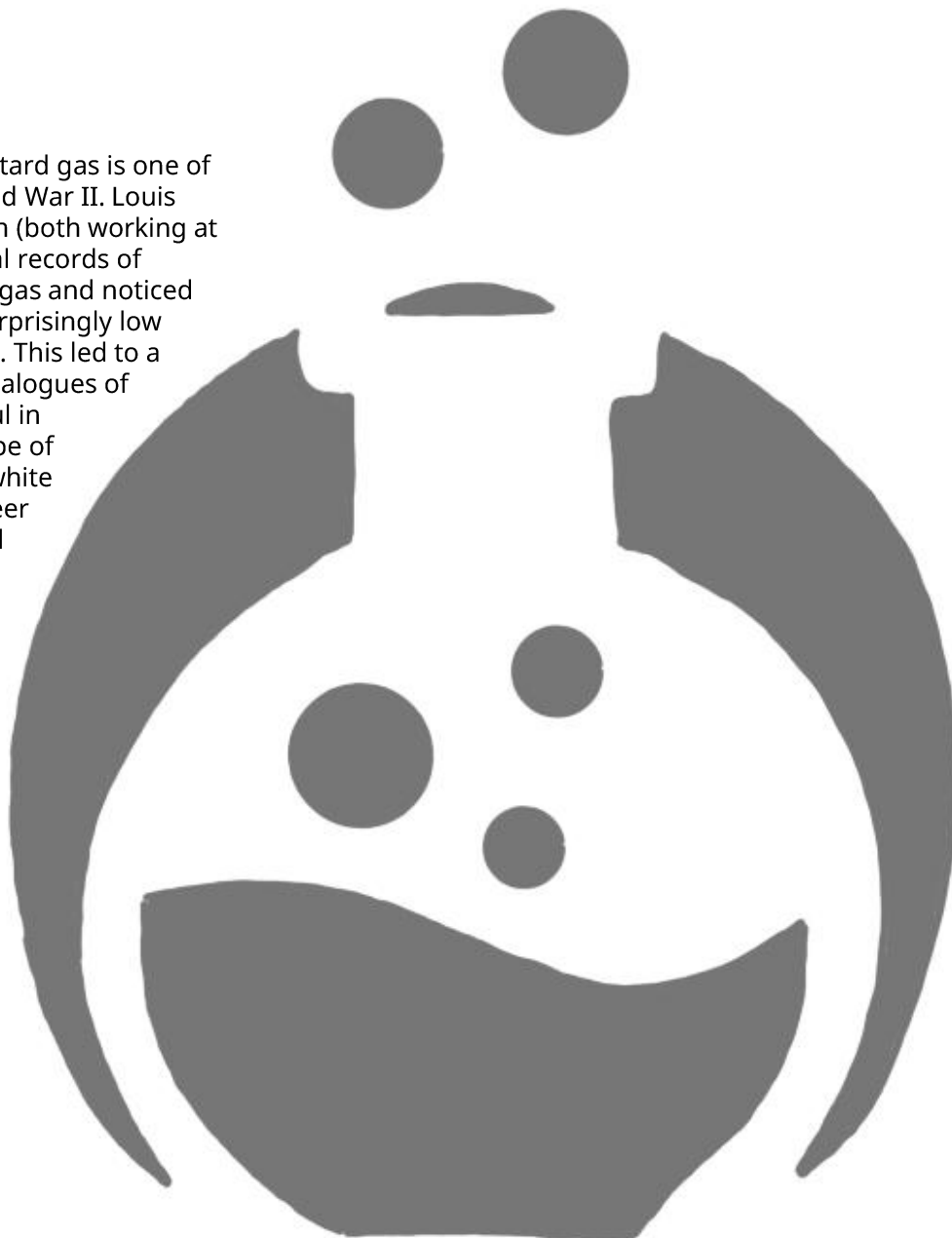


Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part. Add some coloured light to turn it into a bubbling potion!



Exposure of soldiers to mustard gas is one of the defining horrors of World War II. Louis Goodman and Alfred Gilman (both working at Yale) delved into the medical records of troops affected by mustard gas and noticed that many of them had a surprisingly low number of white blood cells. This led to a hypothesis that chemical analogues of mustard gas might be useful in treating lymphomas — a type of blood cancer that starts in white blood cells. Tests on volunteer lymphoma patients resulted in the creation of nitrogen mustards like chlorambucil — important anti-cancer agents that are still used today, and which have benefitted thousands of individuals.

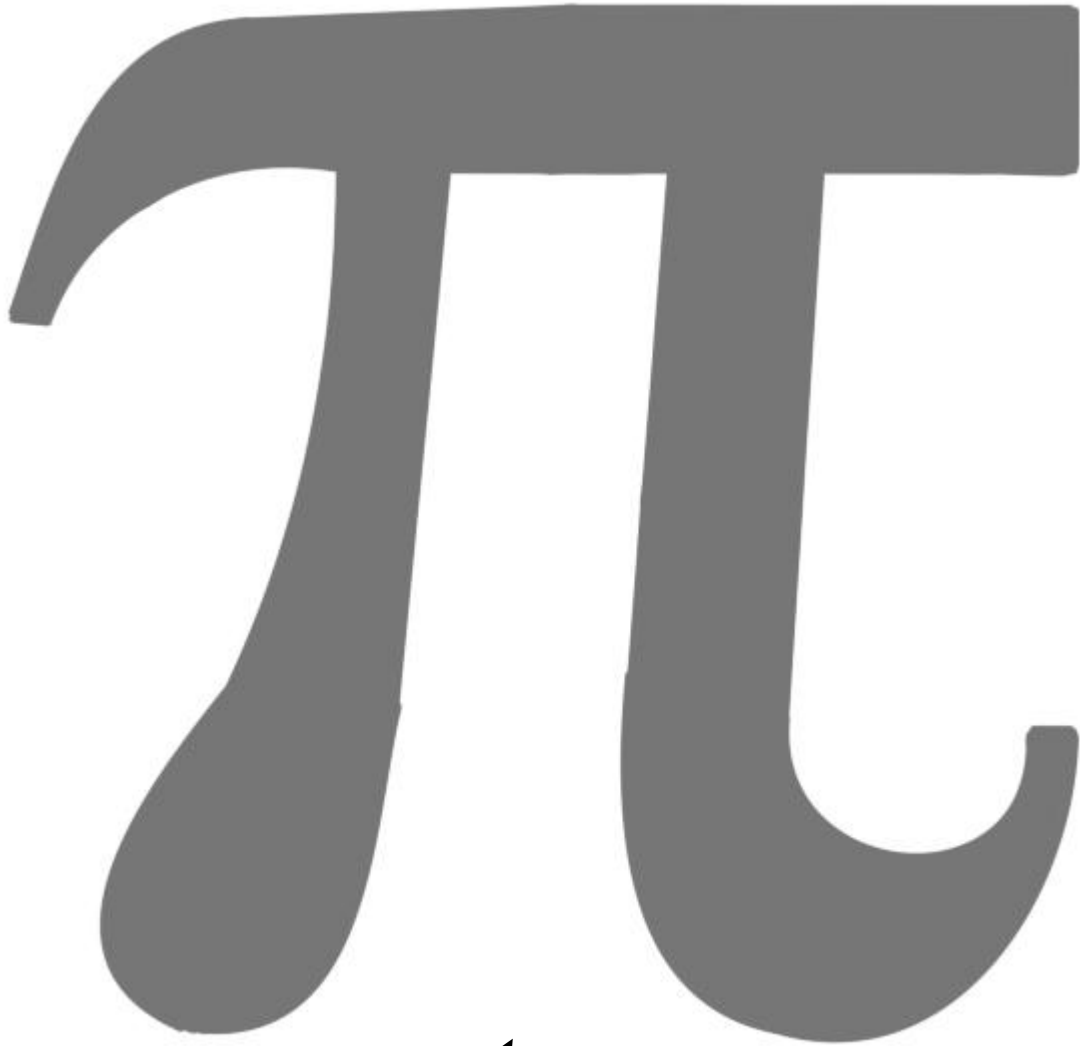
- **Matt Moffitt**,
professor, chemistry



Pumpkin pi



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.



Fun fact!

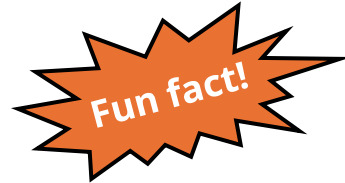
There is a formula that computes any hexadecimal of pi without computing all the other digits.

- **Torsten Schoeneberg**,
instructor, mathematics and
statistics

Volcano

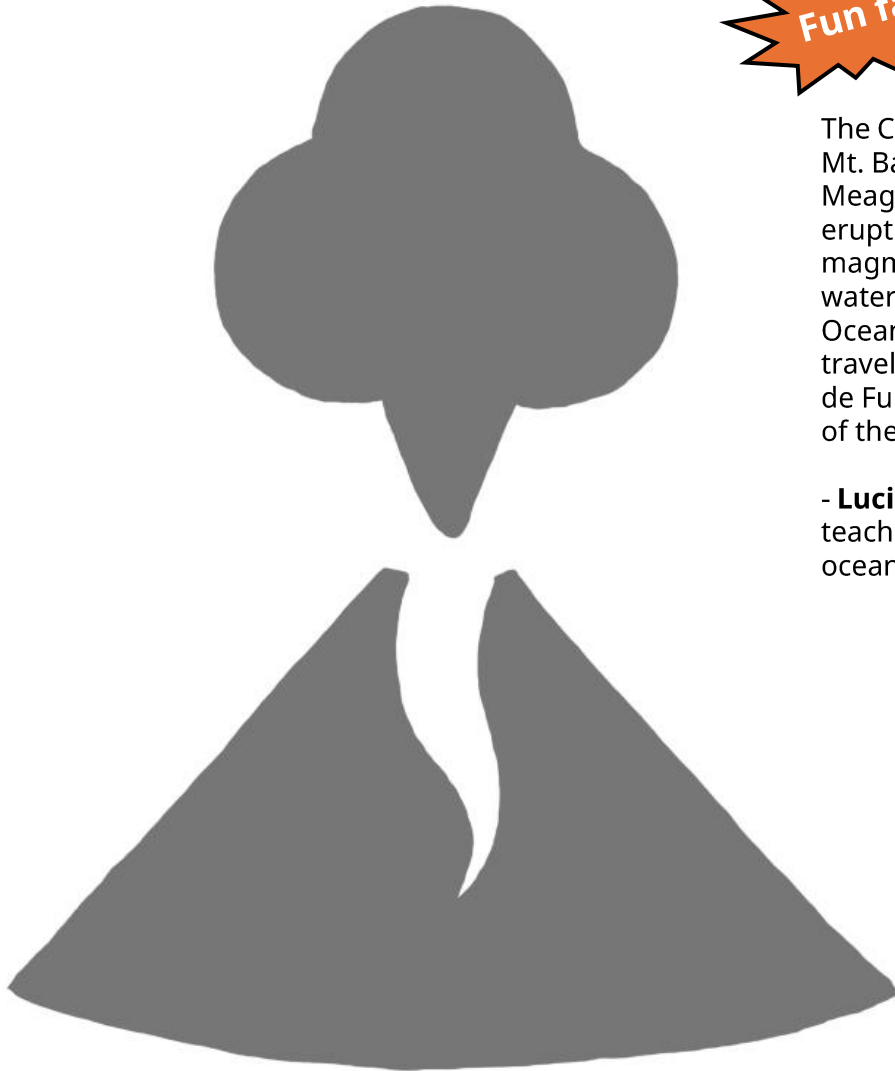


Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part. Add pumpkin guts exploding from the top of your pumpkin for an additional effect!



The Cascade volcanoes, including Mt. Baker, Mt. Garibaldi and Mt. Meager, host explosive eruptions, partly because their magma contains water. This water originated in the Pacific Ocean, taking millions of years to travel with the subducting Juan de Fuca plate beneath the edge of the continent.

- **Lucinda Leonard**, associate teaching professor, earth and ocean sciences



Rocket



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.



Fun fact!

Since 2016, the UVic Rocketry Team has been designing and building competitive rockets to fly in international and national competitions. The team provides students with the opportunity to gain hands-on experience in aerospace design.

Spider



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.

Fun fact!

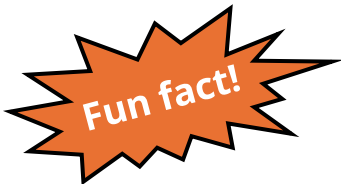
Spiders are invertebrates and have only an exoskeleton, not an internal skeleton. Spiders shed their exoskeleton as they grow, through a process called molting, as the skeleton cannot grow with them.



Black hole



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.



If you could pack the mass of the earth into a sphere with a radius of about 1cm, light would not be able to escape from its surface. Voila, you just made a black hole!

– **Sara Ellison**, professor, physics and astronomy

DNA Helix



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.



Fun fact!

The DNA helix is 2 nm wide, but if all the DNA from one human cell were stretched out, it would reach 2 meters in length.

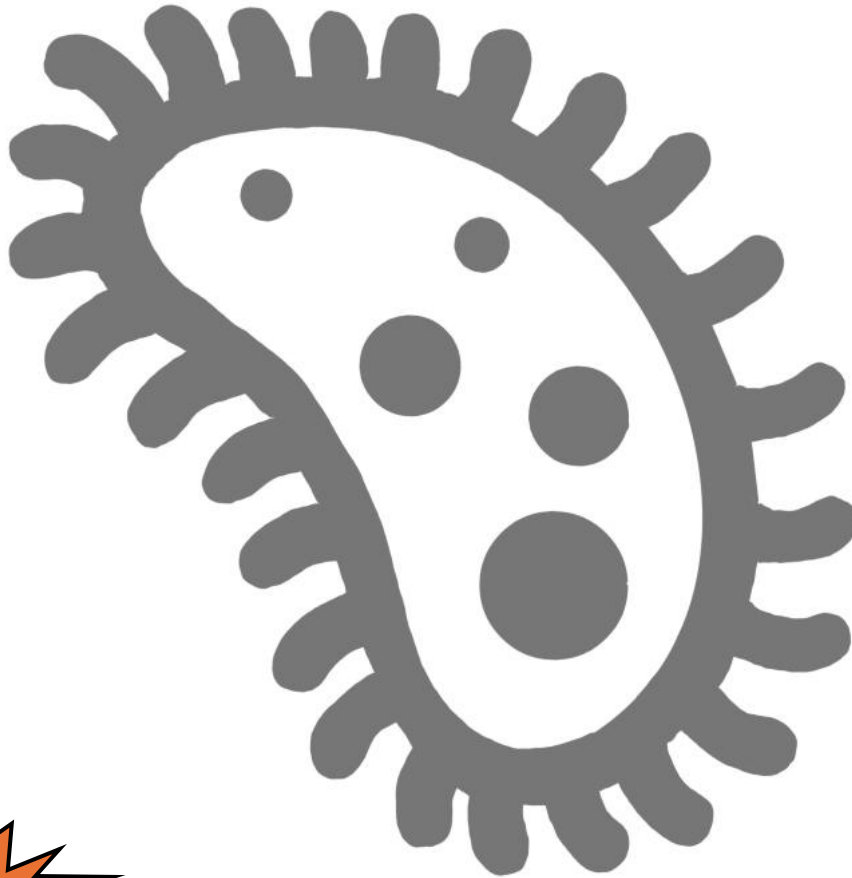
Our DNA contains genes from other organisms including viruses, and a viral-derived gene is important for human placenta formation.

- **Catherine Bachewich**, associate teaching professor, molecular life sciences

Microbe



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part. Use toothpicks to hold up the middle of the microbe.



Fun fact!

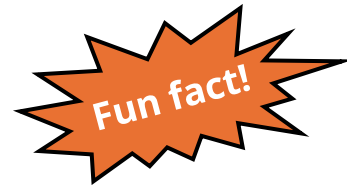
One of my favourite microbe facts is that some bacteria hunt and eat other bacteria. I was so fascinated by this as an undergraduate that I wrote an essay about it. The best known example is *Bdellovibrio bacteriovorus*. It enters the space between its prey's membranes, grows inside and eventually bursts out as a new generation of predators. It's fast too! Some strains can swim up to 160 micrometres per second, or roughly 100 times their own body length in a second. At that pace, a human would be travelling about 600 km/h!

- **Stephen Tuffs**, assistant professor, molecular life sciences

Tornado



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.



Most tornadoes develop from a funnel cloud that descends from a thunderstorm. A line of storm cells can produce multiple tornadoes—the 2011 Super Outbreak involved 367 tornadoes over three days across 21 U.S. states, plus one in Ontario.

- **Lucinda Leonard**, associate teaching professor, earth and ocean sciences



Anglerfish



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part. Add extra light in the appropriate place for added effect!



Fun fact!

The most interesting thing about anglerfish are the parasitic males. I often talk about this morphological reproductive feature in my fish or marine ecology classes. Male deep-sea anglerfish become permanent sexual parasites by finding and chewing their way into the skin of a much larger female and fusing to their circulatory systems, becoming dependant on them for all nutrients.

- **Benjamin Neal**, assistant teaching professor, biology

Neuron

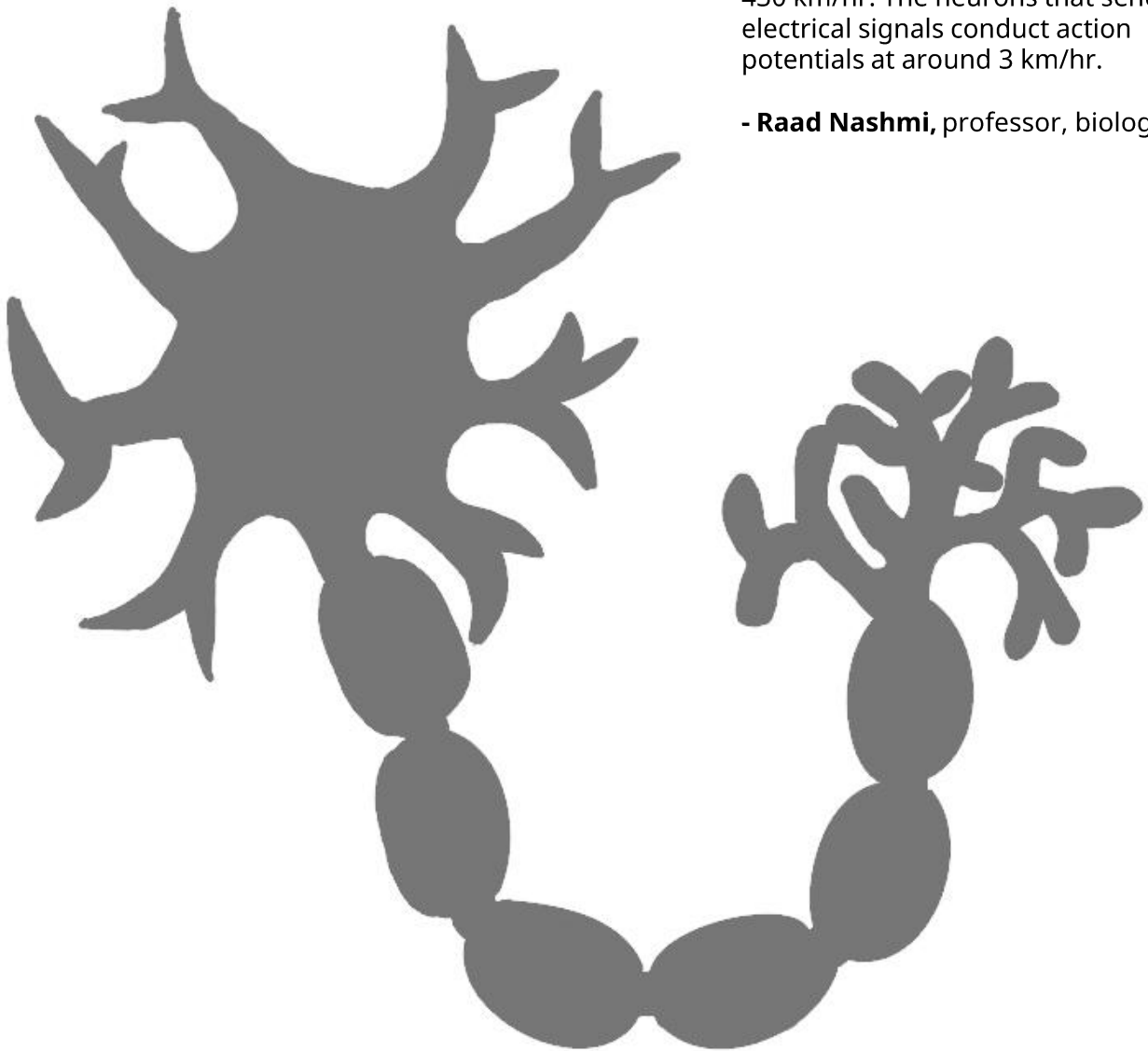


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Fun fact!

Neurons can send motor electrical signals (called action potentials) at over 430 km/hr. The neurons that send pain electrical signals conduct action potentials at around 3 km/hr.

- Raad Nashmi, professor, biology



Skeleton



Instructions: Print the template below at a size that fits on the pumpkin you will be carving. Cut out the dark part.



Fun fact!

When people refer to a 'skeleton', they are typically referring to an *endoskeleton* (which offers strength/support from the inside), which you can find in animals that possess backbones. In most of these, the skeleton is hard and calcified—familiar to us as 'bones'. Yet in other species (like sharks), the endoskeleton is made of cartilage which is softer, and more flexible. By contrast, other animals, like insects and crustaceans (crabs, lobsters, etc.), have skeletons on the outside (called an *exoskeleton*).

- **Dave Punzalan**, associate teaching professor, biology