THE PUYALLUP FAIR PRESENTS:

An Exploration of the Brain

Did you know?

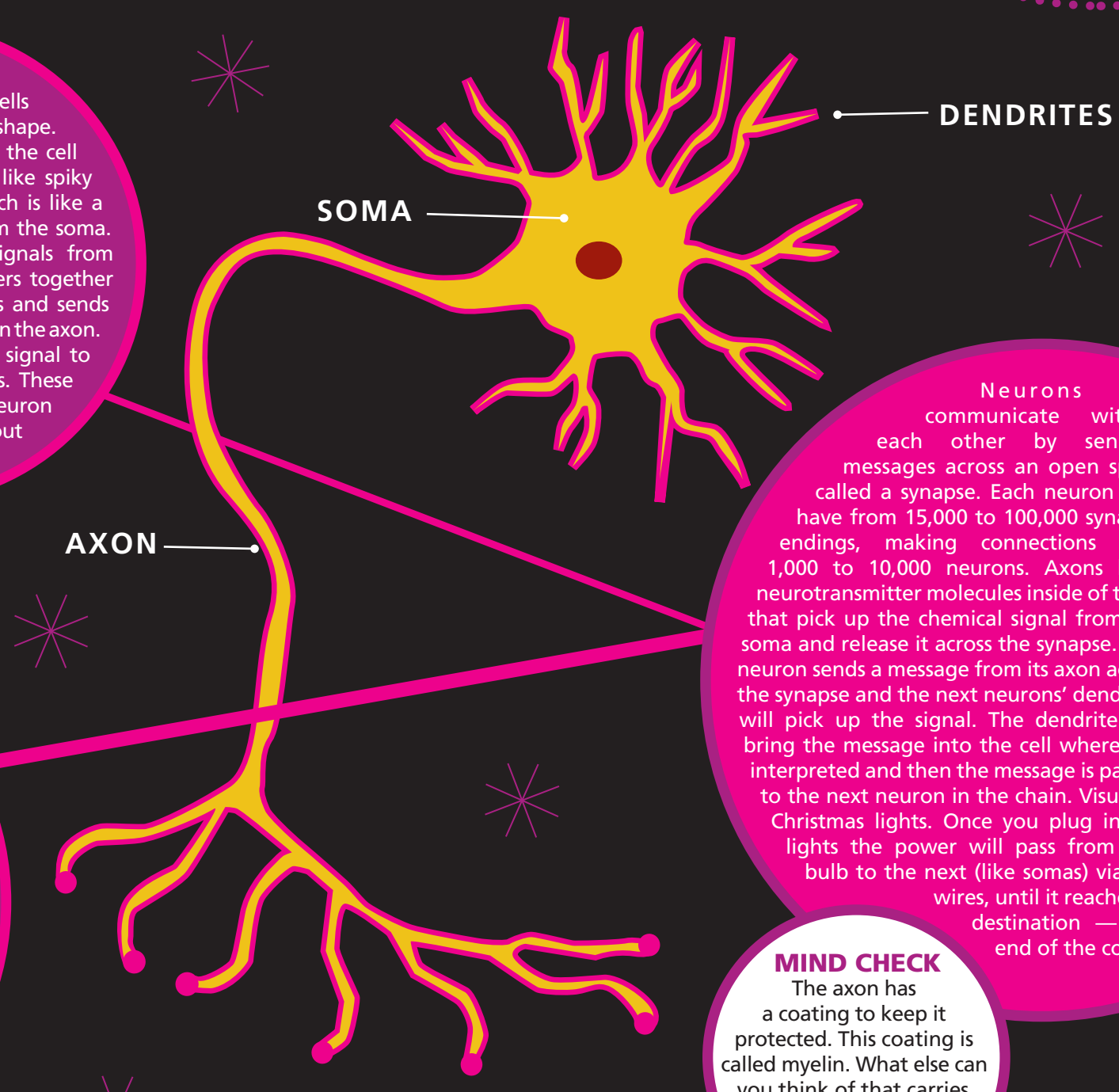
Most students in Western Washington get into the Puyallup Fair for free. All you and your friends have to do is ask your teachers or principal for tickets. Quirky hobbies, mesmerizing photographs, kaleidoscope quilts — it's all yours, **FREE.**

Chapter 3

MAKING CONNECTIONS

NEURONS

Remember that neurons are brain cells that have an interesting shape. There is the soma, which is the cell body; dendrites, which look like spiky messy hair; and an axon, which is like a long arm that extends out from the soma. Dendrites receive (chemical) signals from other neurons. The soma gathers together messages from many dendrites and sends one large (electrical) signal down the axon. The axon communicates the signal to the next neuron's dendrites. These signals travel from neuron to neuron throughout the brain.



We are born with about 100 to 200 billion neurons in the brain. On average we lose about 50,000 neurons per day. Over 100 years, that's less than a 1 percent loss. Until recently we thought that once neurons die we lose them forever. However, some research now shows that new neurons may be developing in the brain. When learning happens, we create more connections among all the neurons in our brain. The younger you are, the easier it is to make new connections. Make sure you take advantage of this and exercise your brain as much as possible now.

Neurons communicate with each other by sending messages across an open space called a synapse. Each neuron may have from 15,000 to 100,000 synaptic endings, making connections with 1,000 to 10,000 neurons. Axons have neurotransmitter molecules inside of them that pick up the chemical signal from the soma and release it across the synapse. One neuron sends a message from its axon across the synapse and the next neurons' dendrites will pick up the signal. The dendrite will bring the message into the cell where it is interpreted and then the message is passed to the next neuron in the chain. Visualize Christmas lights. Once you plug in the lights the power will pass from one bulb to the next (like somas) via the wires, until it reaches its destination — the end of the cord.

MIND CHECK
The axon has a coating to keep it protected. This coating is called myelin. What else can you think of that carries messages and requires a protective coating?

AL'S BRAIN

While you are at the Fair, be sure to stop by the "Al's Brain" exhibit to learn more about your brain. You can also visit the exhibit or the Fair's Web site at thefair.com to enter for a chance to win a free meet-and-greet with "Weird Al" Yankovic on September 26.

10 ACTIVITIES

you can do with your parents to keep your brain healthy

1. Read a book together at night
2. Put together a jigsaw puzzle
3. Go on a bike ride and wear helmets
4. Have a competition to see who can fasten their seat belt the fastest when you get into the car
5. Learn about healthy foods in the Puyallup Fair's Agriculture Department, then go home and make a healthy meal together
6. Watch other kids keep their brains safe as they wear helmets in the mutton busting event
7. Do a Sudoku puzzle together
8. Learn to play a musical instrument or learn a new language
9. Visit the 4-H and FFA competitions to see how other kids are exercising their brains
10. Visit the "Al's Brain" exhibit to learn more about your brain and pick up activities to practice at home together

Healthy Choices:

Scientists are finding that antioxidants help your brain to function better. Antioxidants are in some fruits, vegetables and teas. Try the recipe below to boost your antioxidant intake.

Blueberry Smoothie

Materials:
- 9 ounces of blueberries
- 6 ounces of non- or low-fat yogurt
- 4 ounces of white grape juice
- 3 – 4 ounces of ice
- A blender

Combine ingredients in the blender. Mix and blend.

Note: The great thing about this smoothie is you can't go wrong. Feel free to add other berries to your smoothie or play around with the amount of yogurt or juice.

Learn more about your brain using these great resources.

- mindbrain.ucdavis.edu/about/neuroscience-for-kids
- brainsrule.com/index.htm
- dana.org/resources/brainykids/default.aspx
- hhmi.org/coolscience/
- nobelprize.org/educational_games/
- opticsforkids.org/
- teens.drugabuse.gov/mom/teachguide/MOMTeacherGuide.pdf
- alz.org/brain/01.asp
- alz.org/alzheimers_disease_4719.asp
- faculty.washington.edu/chudler/neurok.html
- kidshealth.org
- howstuffworks.com
- bbc.co.uk/science/humanbody/body/interactives/organs/brainmap/

Sources:
Developed in partnership with the Pacific Science Center's Education Outreach Program.

McCrone, John. How the Brain Works. DK Publishing, 2002.

Newquist, Harvey P. The Great Brain Book. Scholastic Inc., 2004.

faculty.washington.edu/chudler/neurok.html

howstuffworks.com

kidshealth.org

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Newspapers In Education
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Inspiring Students To Learn

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