NEURIO

west virginia STEM news for students

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An interview with **West Virginia University (WVU) student**

Jordan Chapman

Q&A

Q Hi Jordan! Thanks for joining us for the first issue of the Neurite Magazine.

A **You're welcome. I'm happy to be a part of it!**

Q You are a WVU student. Can you tell us something you're working on right now?

A **Something very exciting is that I have the opportunity to work in one of my professors' labs. I'm making very tiny gel beads out of algae. Then, we insert enzymes into the beads.**

Q What's an enzyme?

A **Substances in plants and animals that speed biochemical reactions are called enzymes. They can build up or break down other molecules. Basically, enzymes are catalysts which are chemicals that speed up a chemical reaction without undergoing any change themselves.**

Q It must be really interesting to work in a research lab at WVU. Tell us a little more about those beads. What will people do with them?

A **In the future, the research I'm doing could help extend the time that things like food, medicine and biofuel will last without going bad.**

Q Wow! That must feel very rewarding. You're only in your 2nd year of college, right? How did you know you wanted to do something like this?

A **Yes I'm a sophomore this year. In middle school and high school, I really liked my math classes. Then, once I started taking harder classes, I learned how science and math were really connected. I love how it all works together, and I knew I wanted to learn more in college. Eventually I hope to have a job that will allow me to continue learning math and science concepts while giving me the chance to apply those concepts in my day-to-day work.**

Q Ok, so we can see that math and science are really important. What advice would you give someone who has trouble with those subjects?

A **Keep studying and talk with your teachers if you don't understand something. I had to push myself to learn and understand some stuff when I was younger and taking harder classes was a challenge, but I'm so glad I did! I can tell you, now that I'm at WVU, I've learned that there are so many different types of jobs and careers out there for students who understand math and science.**

Q Tell us what other things you enjoyed when you were in middle and high school.

A **I played tennis, and I also was involved in student council. Both were very good experiences for me! I will tell you that it can be a challenge to play a sport and keep up with homework, but I'm glad I did that too because it taught me how to balance different things in my life.**

Q What advice do you have for our Neurite readers?

A Take the time to explore anything you might have an interest in. You will never know if you could be good at something if you don't try. Use all the time you have before you graduate high school to figure out what you really love to do and then pursue it! I'm thankful I learned more about math and science. I'm helping my professor with some really exciting research here at WVU, and it wouldn't have been possible if I didn't prepare when I was your age.

Exciting news: plants aren't

One reason students may think plants are boring is because you usually don't see them moving. They just seem to just sit there. However, just because you can't see something doesn't mean it isn't happening.

Marshall University biology professor Dr. Marcia Harrison doesn't want you to think plants are boring because then you may have a bad impression of plant biology.

Dr. Harrison said that when plants experience a change in orientation to gravity (falling down for example), growth alterations occur that cause the lower side of the stem to grow faster than the upper side. This causes upward tissue curvature in a process called gravitropism. That means roots grow in the direction of gravitational pull (downward) and stems grow in the opposite direction (upwards). For a visual, Dr. Harrison suggests thinking of a potted plant. When laid onto its side, the growing parts of a plant's stem begin to display negative gravitropism – or, growing upwards.

Harrison's research career has revolved around how plants respond to gravity and the interaction of other factors – including space. Before becoming a professor at Marshall, Dr. Harrison worked as a NASA Research Associate, where she studied the factors that affect how plants respond to a change in orientation. This research is important because it sets the stage for how plants grow on Earth so scientists can predict what will affect their growth on the International Space Station.

"Ironically, my experience with NASA is what led me to be fascinated with plant gravitropism, but I actually became interested in plant growth in high school as part of my science fair project," Dr. Harrison said.

Cover of the fall issue of The Neuron magazine featuring Dr. Marcia Harrison

boring after all!

Try it for yourself!

Watching Plants Grow

Materials

Small pot

Potting soil

Seed (bean seeds work well)

Procedure

- Plant 2 seeds in soil in a pot. Thin to 1 seedling when the seeds sprout.
- Take 1-2 photos per day. *Tip:* Taking the picture from the same distance and height for every shot can be tricky. A point of reference such as something sitting beside or behind the pot will help you see the grouth.
- Water the plant daily or as needed.
- After the plant has grown a while and you have a good selection of images, you can make the sequence into a plant movie.

Here are the core ideas.

- Plants continue to move and grow throughout their lifetime.
- Plants use photosynthesis to produce plant matter.
- Plants need water, minerals and light to grow.

Go to
https://www.youtube.com/user/harrisonmu
to see Dr. Harrison's plant videos!

Then share your experience, ideas, photos or movies with us: info@wvresearch.org

Here's how to make a plant movie of your own!

1. Capture images at specific time intervals as described in the procedure on the left.
2. Save the images together in a folder. The images should be numbered in order so that the first image has the lowest number and the final image has the highest number, then sort the images so they are listed from lowest to highest.

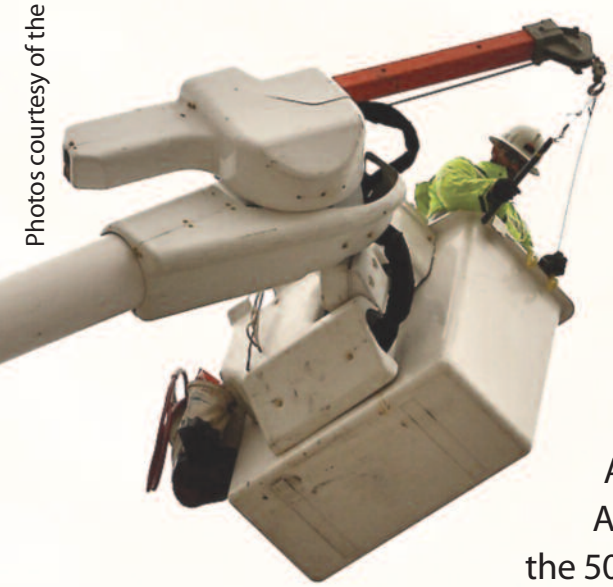
Using Windows Live Movie Maker

(free downloadable software available from Windows)

1. Open Movie Maker.
2. To add images, select "Add videos and photos" from the Home tab. Select all the images you wish to use for your video and select "open". The images should appear in Movie Maker. A movie of your images appears on the left along with the duration of the entire movie.
3. By default, Movie Maker assigns 7 seconds per frame for the movie. Change the duration of the frames to 1 or 2 frames per second. To do this to all of the frames, first check the "Select All" box in the Home tab. In the "Video Tools-Edit" tab enter the duration for each slide. For example, enter 0.5 if you want each slide to be viewed 0.5 seconds (or 2 frames per second). Play the movie to see whether the time is what you want.

   Note: You can also adjust the duration for individual slides; simply select one slide and edit it.
4. Once you wish to make a movie, use the 'Save Movie' button with "recommended setting" (or "for computer").

Pumpkins survive 50-foot freefall



Photos courtesy of the Charleston Daily Mail

Students from 33 schools in 11 counties dropped more than 100 pumpkins in the 16th Annual Capital City Pumpkin Drop last fall at Appalachian Power Park in Charleston.

The object of this competition, along with others similar to it each year, is to design a container that will protect a pumpkin using math and science skills. Then, the container with the pumpkin inside is dropped from a designated height.

Not only are math and science skills important, but students who enter the competition often show their creative sides by decorating the containers.

About 20 percent of the pumpkins dropped in the Appalachian Power Park pumpkin drop survived the 50-foot fall.

A total of $1,500 in cash prizes was awarded to the winning schools.

WVU student loves space ...and social media

Nicholas Underwood, an aerospace engineering graduate student at West Virginia University (WVU), has found a way to combine his love of space and social media.

Underwood, a native of Beaver, West Virginia, was selected to be part of NASA's social media contingent to cover the Magnetospheric Multiscale Mission Media Day at Goddard Space Flight Center in Greenbelt, Maryland in October. He was one of only 25 people nationwide to be selected.

"It's pretty rad," Underwood said. "I got to go behind the scenes and see all the stuff that I read about on the Internet and get excited about."

His Twitter profile, @TheNickU, reads, "I like space and being nice to people a lot."

Underwood's NASA selection was based on his social media capabilities, which have been on display on the @WVUStudents account multiple times. The account consists of tweets from different WVU students each week.

Underwood is researching spacecraft guidance and navigation control for his master's degree at WVU. He received his bachelor's degree in aerospace engineering in 2014. During his time as an undergraduate, he was a Statler College Ambassador and an Engineering Challenge Camp coordinator. His dream, though, is to become an astronaut.

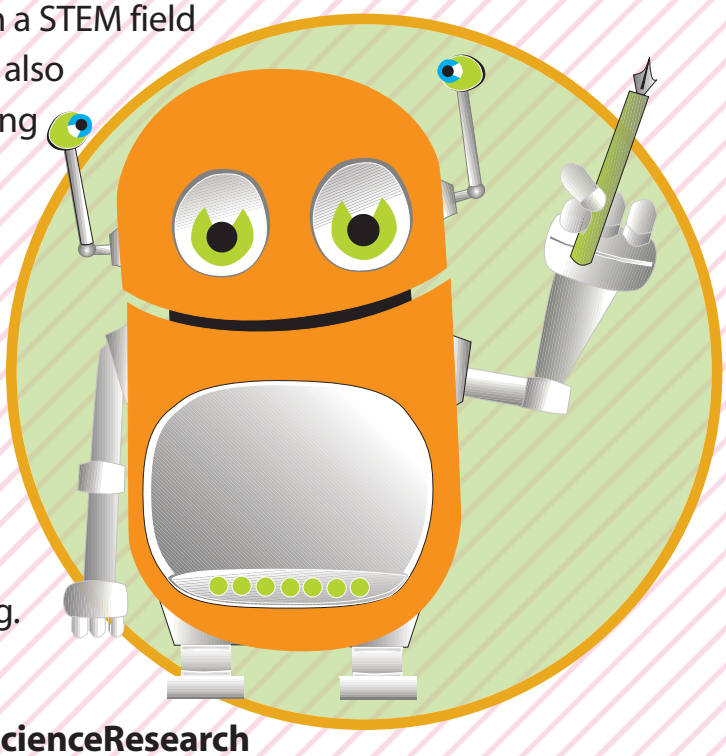
"I am incredibly excited to be here. Everything I do is to pursue my dream," he said.

"WVU has given me so many opportunities along with the skill set, confidence and all the other nice things you need to pursue the things you want to do."

What's a Neurite?

A neurite refers to any projection from the cell body of a neuron. The term is frequently used when speaking of developing neurons.

The Neurite magazine is designed to inspire students like you to become more interested in a STEM field for your future career. We hope you'll also be excited to read about what's happening right here in your state! The Neurite is an extension of *The Neuron* - West Virginia's quarterly science and research magazine.



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