Scientific research used in everyday lives

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A new addition to this year's Farm Progress Days tent was the Life Science and Society pavilion where visitors had an opportunity to take a closer look at how scientific research at the University of Wisconsin-Madison is changing lives.

Tom Zinnen, a biotechnology outreach specialist with the UW Extension, was in charge of the tent. He shared, "Our goal is to transform how people view science and how they use science in making personal choices and public policies."

He noted everyone hears a lot about DNA these days, but many do not understand what it really is. At one of the stations, guests had an opportunity to actually extract DNA from wheat germ. They had a chance to learn to use a micropipette to measure and move a millionth of a liter of milk. They also had a chance to take the hands-on challenge to see how well they wash and determine if they actually remove all the germs from their hands in the process.

A range of research in breeding, biotechnology, genomics and cell biology was covered.

A popular feature in the tent was the "colorful carrots" display that explored the breeding and nutritional benefits of carrots that are purple, red, white or the traditional orange.

"Red is my favorite," says Sherry Tanumihardjo of the UW Extension, who explained the various colors of carrots. She says the compounds that give carrots their bright orange color are a- and b-carotene. They are the most important source of vitamin A for people in the United States, Africa and Asia. Carrots had an increasing popularity for Americans because of the "baby" carrots that are so popular now.

"Purple carrots actually pre-date the orange," she explains. "Orange carrots originated in the 17th century. Interestingly, purple and yellow carrots came before orange carrots. White and red were developed around the same time in different parts of the world."

She works with horticulturists and does nutritional work with the plants to improve human health. "Our goal is to get developing countries to grow carrots with more beta carotene so they won't have an 'A' deficiency," she says.

The purple carrots are highly colored because of anthocyanins that are also responsible for the colors of red potatoes, apples and cranberries. Anthocyanins are very potent antioxidants. Antioxidants are able to trap "bad" compounds formed in the body so they do not damage cells. The yellow carrots contain lutein, which is another compound in the carotenoid family. Lutein, also an antioxidant, is found in the back of the eye. Thus, lutein might be an important compound in the prevention of muscular degeneration, the leading cause of blindness in the elderly. Lutein is also found in green leafy vegetables.

Another of these carrots is red. The carotenoids that give this carrot its deep, rich color are lycopene and b-carotene. Lycopene might prevent prostate and other cancers. In the United States diet, tomatoes provide about 55 percent of dietary lycopene. Thus, the availability of carrots with lycopene could increase consumption of lycopene and reduce certain forms of cancer.

Although the white carrots do not have any color and therefore are not a significant source of carotenoids, they are a good source of fiber.

"Can you imagine a salad made with white, yellow, orange, red and purple carrots?" she says. "The possibilities are endless!"

In another area of the tent, Tom Zinnen and Paul Perick talked about potato research that is actually fusion that allows traits from one variety of plant to be moved to another plant. These are wild potatoes, for instance, that have some traits that would be good to combine with other varieties of potatoes in the field. Researchers are working on ways to perfect the plant that provides a basic staple in the diet.

Zinnen explains, "These disease-resistant potatoes are some of potato's 'cousins' brought to Wisconsin from Peru."

A popular spot was the zebra fish tank and the camera that allowed visitors to view their clear eggs and watch the embryos develop.