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Vet Tech Program in Dillon, MT.

Pima Medical Institute is thriving at the University of Montana Western. Almost 50 students enrolled, with 4 instructors, including 2 veterinarians and 2 CVTs. Dr. Darleen Miller has joined our team as did Alex Johnson, CVT. Our AVMA accredited program has a strong curriculum that also excels in the technical skills. We may be working on a dog, or a rat, or an alligator. A horse may trailer in or we may go and vaccinate cattle, do CMT tests on milk cows or visit a zoo for a field trip.

Our students are rocking it on the VTNE, the national boards and most are becoming CVT throughout the state of Montana. Most students get hired during their externships which could be looked at as a very long job interview. We educate the students on all animals including food and fiber animals. We spend time on the Meat Quality Assurance program and the Veterinary Feed Directives.

Our goal is get our students in, get them trained and then help them find jobs. The Career Services extend from any Pima Campus in the West into the future career or our graduates. We work on soft skills and professionalism and help students have a successful, life long career.

If you are interested in hearing more about how we are educating the future Veterinary Technicians for Montana, please give me a call.



Pima Medical Institute/Dillon on UMW Campus
Veterinary Technician Program Director

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Photo credit: Drs. Marshall W. Johnson and Lynn LeBeck from California.

Valuable information shared at regional biological control meeting held in Montana

By Gadi V.P. Reddy, Montana State University, Western Triangle Ag Research Center, Conrad, Montana

Dr. Gadi V.P. Reddy and staff of the Montana State University Entomology/Insect Ecology Program organized a two-day biological control meeting held at Grouse Mountain Lodge, Whitefish, Montana, on October 11-12, 2018. Dr. Reddy was the 2018 Chair of the Multistate Research Project W4185, Biological Control in Pest Management Systems of Plants, which is the largest multistate project in the USA focusing on biological control of pestiferous insects and weeds. This meeting was part of a continuing annual sequence in which group members gather to discuss progress on different projects and discussing ideas. More information on the group and its annual meetings is available at the link, <http://agresearch.montana.edu/wtarc/fielddays-pdf/2017TradersDispatch12.pdf>

Team members of the MSU Western Triangle Agricultural Research Center were Julie Orcutt, Deb Miller, Ramandeep Sandhi, Rama Gadi, Dr. Govinda Shrestha, and Dr. Anamika Sharma. They helped with conference registration and other activities. Dr. Marshall W. Johnson, University of California at Riverside, and Dr. Lynn LeBeck, Association of Natural Biocontrol Producers, have been a part of this group for many years and assisted the official members of the group in various ways.

Meeting attendees were from federal agencies such as the U.S. Department of Agriculture Agricultural Research Service (USDA-ARS), U.S. Forest Service (USFS), and state universities and departments. Some participants were from the land grant universities of Hawaii, Guam, California, Florida, Idaho, Montana, Oregon, New Mexico, Wyoming, Utah, and Colorado. There were international attendees from France, Switzerland, Italy and Canada. Additional information about the speakers in this meeting and details about their talks is available at the link, <http://agresearch.montana.edu/wtarc/fielddays-pdf/2018W4185Meeting.pdf>. Montana State University and the California-based company Oro-Agri sponsored lunch/dinners and beverages for the participants. Marliis and Dan Picard from Conrad generously volunteered to accompany attendees' families on sightseeing trips around Whitefish and Glacier National Park. At the group dinner, local naturalist Pat Hagan presented a highly informative and interesting talk with 'Grizzly details' about this grizzly country.

Overall, there were 35 presentations with six from agencies highlighting the status of biological control around the world.

Sixteen presentations were on insect biocontrol, 12 were related to weed biocontrol and remaining talks were from agencies. A summary and key notes from each speaker are mentioned below.

Dr. Reddy opened the conference by welcoming the group to Montana and providing a few announcements regarding the meeting and scheduled talks. He presented details about the 2019 Excellence in Multistate Research Award and Leadership Award. This information was for group members who plan to apply for these awards. Updates regarding the new Federal Farm Bill indicated that Cornerstone Government Affairs is unable to predict whether or not the new Farm Bill will be passed before the current continuing resolution expires in December. The political landscape is uncertain and the major issues keeping the Farm Bill from being passed are: Commodities, Reorganization of conservation programs, Nutrition-Supplemental Nutrition Assistance Program Education (SNAP-ED) controversy on limiting eligibility and Crop Insurance. The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) is working on their transition plan for movement of all staff including NIFA and Economic Research Service (ERS) out of their DC headquarters. The expectation is that NIFA and ERS will identify their new location by January 2019 and begin their move so as to be open for business in the new facility in Summer 2019 and completely moved by December 2019. However, all NIFA business is expected to continue uninterrupted. There is a NIFA Process Team in place making sure that NIFA meets its mission even with decreased staffing. They are focusing on competitive grants and expect that capacity grants will be largely unaffected. Dr. Tom Shanower is stepping down and Dr. Scott Angle will be on board as NIFA Director by end of October. Listening Sessions were held on Oct 11 (Hartford Connecticut), Oct 18 (New Orleans) and a further meeting has been scheduled on Oct 25 (Minneapolis).

Dr. Robert M. Nowierski, National Program Leader at USDA-NIFA, updated the status of classical biological control of weeds while Dr. Robert S. Pfannenstiel, USDA-APHIS-PPQ, updated information on environmental compliance for new biological control agents. Similarly, Dr. Lincoln Smith, USDA-EBCL in France, provided an update on biological control work at their center. Dr. Francesca Marini from BBKA, Italy, gave an overall talk



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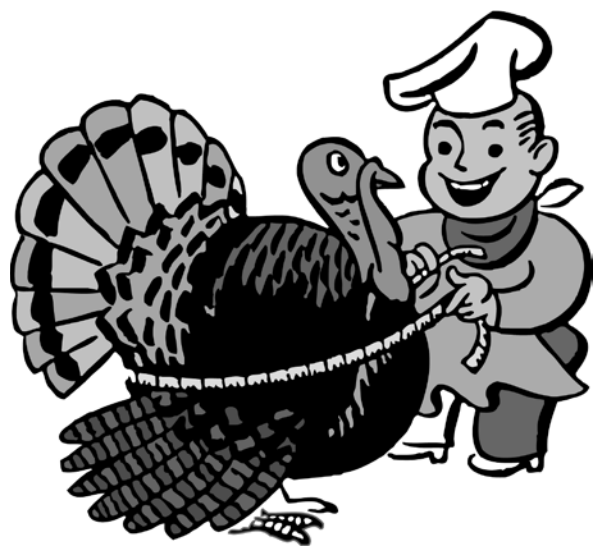
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Emergence of specialized body parts, plants

By University of Nebraska-Lincoln

New research conducted by the University of Nebraska-Lincoln's (UNL) James Schnable will use corn to test the idea that the emergence of specialized body parts occurs through whole genome duplication.

A gene consists of enough DNA to code one protein, and a genome is the sum total of an organism's DNA. Schnable, an assistant professor in the Department of Agronomy and Horticulture and Center for Plant Science Innovation, has earned a 2-year, \$299,801 grant from the National Science Foundation for a project to prove that certain genes are not available for individual duplication, and can only be replicated through whole genome duplication.

"Transcription factors are genes which control when other genes are turned off and on. Because cells are very sensitive to quantities of these transcription factors present, duplicating a single transcription factor gene can throw things out of balance, usually with negative consequences for the plant or animal in question. In a whole genome duplication all the transcription factors and all the genes they regulate are duplicated at the same time which avoids many of the problems caused by single gene duplication."

In both plants and animals, the emergence of new specialized body parts, such as floral organs in plants or the multiple specialized types of teeth found in heterodont animals, is a rare process. Generally, these specialized organs appear to originate as specialized versions of existing organs, yet their specialization requires a separation in regulation between different copies of the same organ.

The research could explain why the emergence of new, specialized body parts is so rare. Most apparent links between whole genome duplication and an increase in separately defined body parts, such as the 4-footed animal or flowering plants, occurred hundreds of millions of years ago.

Schnable's team has focused this research on corn, as it produces two specialized flower heads for male and female reproduction, while all other related plants only produce a single kind of head. Researchers will test the link between a whole genome duplication in the corn lineage and the evolution of its distinct flowering heads. Reverse genetic techniques will be applied to both corn and sorghum, which lacks two flower heads, to prove that this emergence required whole genome duplication, which created duplicate copies of many genes which rarely duplicate through other processes.

"We could potentially predict when the emergence of new specialized body parts is more likely and provide initial insights into how specialized body parts could be engineered in future synthetic biology efforts," Schnable said.

Research in this area also has the potential to guide the development of new engineered varieties of crop plants with multiple specialized leaf types. Engineering leaves high in the canopy to have fewer chloroplasts, would allow light to penetrate deeper leaves where lower wind speeds and higher humidity reduce the transpirational water cost of photosynthesis.

The research project will provide valuable training on conducting science at the intersection of genomics, genetics and phenomics to multiple graduate and undergraduate students.

To learn more about Schnable's research, visit <http://schnablelab.org/>.

Valuable information shared

CONTINUED FROM PAGE C20

about their research work at BBKA. Dr. Harriet L. Hinz from CABI (Switzerland) updated the group on activities at CABI around the world. Some group members provided talks on insect biological control of insect pests on cereal, oilseeds, forage and fruit crops. In addition, there were interesting talks on biological control of important weeds such as saltcedar, French broom, Dyers woad, toadflax, tamarisk, Rush Skeleton, Leafy Spurge, Hoary Cress, and Russian olive. Dr. Dan Bean, Colorado Department of Agriculture, gave an important talk on rust fungus as a potential biological control agent for controlling Canada thistle. On biological control of insect pests, several talks were included in this meeting. Insect pests included in these talks were wireworms, Asian citrus psyllid, Emerald ash borer, Colorado potato beetle, wheat midge, pea leaf weevil, and flea beetles. The mutual information on various biological control agents was shared and discussed. The meeting provided an avenue to update all members about the present status of various W4185 biocontrol programs and proved to be a highly productive meeting.

At the end, during the business meeting, the group selected Dr. Stephen Novak, Boise State University, as "Member at Large" for 2018. He will serve as W4185 Chair in 2021.