


CHIEF DULL KNIFE COLLEGE  
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Volume Two Issue 3  
Spring 2019

## Vooheva Ledger

MORNINGSTAR

Published by Chief Dull Knife College, Lame Deer, MT



### CDKC Students Head for Wallops Island

CDKC students prepare for another trip to Wallops Island in Virginia for a “payload” workshop sponsored by NASA and The University of Colorado Space Grant Consortium. Nine students will travel with three faculty members for a twelve day stay on the east coast of Virginia in June. The trip will include a visit to Goddard Space Flight Facility in Baltimore where the giant replacement telescope for the Hubble telescope is being assembled. Goddard is the parent NASA center for the Wallops Flight Facility. The trip is funded by a three year NASA grant and a five year National Science Foundation grant awarded to Chief Dull Knife College. Participants will assemble components for experiments which will be flown in a NASA rocket to an height of 74 miles. The experiments will record various readings throughout the flight and then experience “zero” gravity for a short time and return to splash-down in the Atlantic ocean. NASA then retrieves the rocket and data cards from each experiment for analysis by the students.



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CHIEF DULL KNIFE COLLEGE  
1979

[www.cdkc.edu](http://www.cdkc.edu)

Edited By Jeff Hooker



# President's Corner

Writing any language is always a tricky proposition anytime. Writing our own tribal languages is an even trickier proposition because it's so easy to object to the way a person writes their own tribal language, or the objection might be with the person who started a tribal writing system.

In the case of the Cheyenne people, one of the people who first started putting our language into written symbols was Dr. Rodolphe Petter. He began this monumental effort among the Southern Cheyenne people and later continued this effort in Montana among us Northern Cheyennes. One of the objections to the Petter writing system is that it is a "German" writing system.

This objection is usually voiced by people who don't even know how to read and write Cheyenne. I always find that kind of "objecting" interesting because I suspect that it's the "not knowing how to read and write the Cheyenne language" that is the real problem for these people. Besides, R. Petter was Swiss, not German, and his own first language was French. However, he did have to learn German before he became a missionary. So he did use German sounds to represent some Cheyenne sounds.

The point is that it doesn't matter what the alphabet is based on; it matters that the alphabet reproduce the Cheyenne sounds as closely as Cheyenne speakers say them. The present writing system does just that and it is not based on the Petter system.



Hena'haanehe

The Cheyenne writing system has gone through various versions until it now is represented as it is in the present day version: a, e, h, k, m, n, o, p, s, š, t, v, x, and an apostrophe which represents the glottal stop. There are 14 symbols in the Cheyenne alphabet and three additional unvoiced vowels: â, ê, and ô.

The down side to the present alphabet is that it takes a special font to write the Cheyenne words and not all computers are equipped to accommodate the font. I have the Cheyenne fonts on my computer and it was easy to get it from Wayne Leman. He is quite willing to help anyone who wants to have their computer speak, read, and write Cheyenne.

## CDKC Summer Class Schedule

Classes Begin: Tuesday, June 4, 2019

Number	Course Description	Cr	Day	Time	Room	Instructor
<b>ADDICTION STUDIES</b>						
AD 250	Legal, Ethical, Professional Issues	3	TWTH	9:00 - 10:30	208	Hartman
AD 251	Principles of Counseling and Group Theory	3	TWTH	10:30 - 12:00	121	Gaskill
<b>FINE ARTS</b>						
AC 150	Foundations of Art	3	TWTH	12:30 -2:00	205	K.Briggs
AC 154	Introduction to Photography	3	TWTH	2:00 - 3:30	206	K.Briggs
<b>BEHAVIORAL HEALTH</b>						
BH 154	Mental Health First Aid	3	TWTH	12:30-2:00	208	Hartman
BH 295	Integrated Behavioral Health	3	TWTH	2:00 - 3:30	208	Hartman
Course includes Clinicals in Hardin						
<b>BUSINESS</b>						
BU 150	Introduction to Business	3	Online	2:00	online	Wuest
BU 260	Management	3	Online	12:30	online	Wuest
BU 150/BU260 first week (TW or TH) meets in room 211 at 12:30						
<b>CHEYENNE STUDIES</b>						
CH 161	Cheyenne Language I	3	TWTH	10:30 - 12:00	122	Littlebear
CH 250	Ethnobotany	3	TWTH	3:30 - 5:00	122	Tallbull
<b>COMMUNICATION ARTS</b>						
CA 071-076-01	English Skills Seminar	1	TWTH	9:00 - 10:30	202	Hedges
CA 071-076-02	English Skills Seminar	1	TWTH	10:30 - 12:00	202	Hedges
CA 071-076-03	English Skills Seminar	1	TWTH	2:00 - 3:30	202	Hedges
CA 151-01	College Writing I	3	TWTH	10:30 - 12:00	126	Bertin
CA 151-02	College Writing I	3	TWTH	12:30 - 2:00	202	Hedges
CA 165	Introduction to Public Speaking	3	TWTH	12:30 - 2:00	122	Bertin
CA 251	College Writing II	3	TWTH	2:00 - 3:30	126	Bertin
<b>EDUCATION</b>						
ED 250	Educational Psychology	3	TWTH	12:30 - 2:00	121	Gaskill
ED 260	Introduction to the Education of Exceptional Children	3	TWTH	10:30 - 12:00	208	Nansel
<b>HISTORY</b>						
HS 251	US History I	3	TWTH	9:00 - 10:30	122	Briggs
<b>MATHEMATICS</b>						
MA 071-079	Math Skills Seminar	1	TWTH	9:00 - 10:30	115	J Bertin
MA 071-079	Math Skills Seminar	1	TWTH	12:30 - 2:00	115	J Bertin
MA 071-079	Math Skills Seminar	1	TWTH	2:00 - 3:30	115	J Bertin
MA 156	Contemporary Math	3	TWTH	10:30 - 12:00	211	J Bertin
MA 255	Statistical Methods	4	TWTH	9:00 - 10:30	211	Ator
<b>MUSIC</b>						
MU 150	Music Appreciation	3	TWTH	9:00 - 10:30	121	Maloney
<b>PSYCHOLOGY</b>						
PY 150	Introduction to Psychology	3	TWTH	2:00 - 3:30	121	Gaskill
<b>SCIENCE</b>						
SC 100	Science Seminar	3	TWTH	10:30 - 12:00	209	Stiff
SC 158	Discover Biology/LAB	4	TWTH	12:30 - 2:00	209	Stiff

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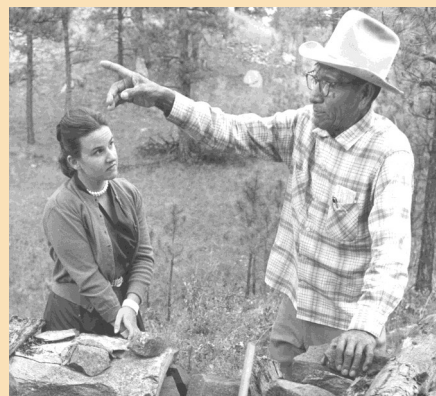
\*Free use of books does not include required software or other materials used in classes



# Reflections

## John Stands In Timber

Recorded by Margot Liberty  
Circa 1958



### The Medicine Hat

The Hat has been in Birney for 38 years.

Sandcrane and Headswift were Coalbear's sons. Old Coal Bear lived here. 1877. It went to Wounded Eye, between Busby and Kirby. When he died, they gave it to Blackbird around 1920. Then Rockroads, then Coal Bear's son Sandcrane. Then his brother Headswift took over and had it until he died a few years ago. (Then his daughter Josie kept it until it was moved recently to Busby for Ernest American Horse.)

Coal Bear was the keeper who came out to meet Sweet Woman in 1877. Still had [Medicine Hat] up to about 1900. Black Hairy Dog [was] keeper of the Arrows about that time. [He] went back to Oklahoma with that bunch.

The keeper was supposed to be good natured, not get mad too easy; [he speaks honestly.] Don't have to be a religious man when chosen. They say Coal Bear was not religious when chosen; took part in no ceremonies. He was chosen by the priests because of good character and honesty. I remember the old man; he talk slow, not too fast, he always [goes about] like he thinks about religion all the time. Do things in a religious way. Supposed to be this that keeps the tribe clean, away from bad things. They say there is a bad one amongst the people, there has to be; he is the one to cause troubles and sorrow. The Bible calls it [an] evil spirit has gone into a man's heart; uses his speech and strength to do harm and to kill.

Almost identical to [the] Bible those two things; they may have same teachings. Sweet Medicine may have brought the same teachings when he organized the tribe; and they were little by little forgotten as they [were] passed down. Maybe the main rules were forgotten. Even during my lifetime there has been a lot of changing. The Medicine Lodge (called

the Sun Dance by whites, not Indians) the government stopped this; I can remember just like a dream, when they put the Sun Dance lodge up -- I remember that part; it was closed by the government at that time. It came back in Eddy's time in 1907; they called it a different name. The old men called it a Willow Dance because willows represent new growth; they wear willows. When it's all done growing they wear sage brush on ankles and wrists. I watch these 1925 all priests of Sun Dance gone beyond. Young men became members of Sun Dance lodge and trying to give instructions. Tallbull is a young man -- he can't teach everything. He has to find somebody else. Even the songs -- they don't know the songs. I counted all the songs from the first night; must have been 12 songs used and now I can count only 5 or 6. You can see by watching, too, that many things in the lodge have been changed.

# Mapping History

CDKC students were given a rare opportunity to document history for future generations. Students in the Fall, 2018 Introduction to Geographic Information Systems (GIS) course participated in a project to collect data and location information from the grave markers in the Lame Deer cemetery.

Instructor Dan Pleier created the project as the Capstone for a Master of Science degree in Geographic Information Science (GISc) from the University of Denver. Students assisted Mr. Pleier in surveying the entire cemetery using Trimble Geo7x GPS data collection hardware and Trimble Positions GIS differential correction software to locate graves (to within 18 inches!).

The GPS had to be held over the grave marker to find the location and the required data would be entered in through the touch screen. The integrated camera was also used to take a photo of the marker. A database of names, dates, and locations was created using ESRI ArcGIS 10.5.1 software where grave marker information was added.

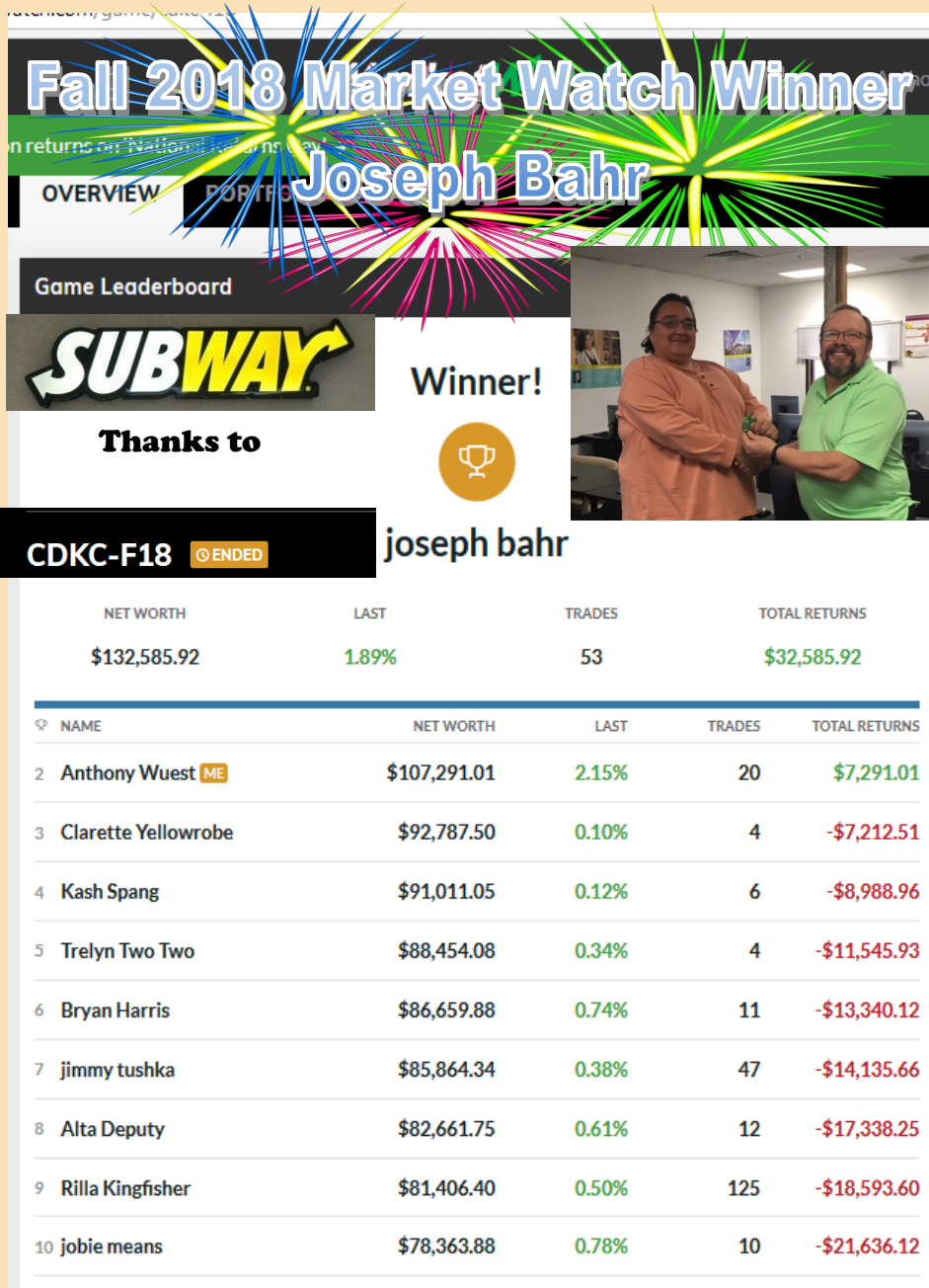


The researchers found nearly 750 grave sites with 200 of those lacking markers with names or dates. This information can be displayed on a computer screen or a printed map. The data collected can be sorted, searched and used for further research and statistical analysis. The background image for the printed map was created from 174 georeferenced images captured with a DJI Phantom 3 Pro quad copter and processed with Pix4d Mapper software in December, 2018.

Printed copies of the map will be available to view in the CDKC Cultural Center and in the Woodenlegs Library on the CDKC Campus. The Lame Deer cemetery is one of several on the reservation and will be the first to be mapped. Results of this research can provide a data framework for research of other local cemeteries.







Joseph Bahr turned his \$100,000 of virtual money into \$132,586. That is a capital gain of 32.6%. This was Joseph's 3rd consecutive semester winning the Market Watch Challenge.

**Stocks traded by Joseph were:** (FB) Facebook Inc. CI A, (AMZN) Amazon.com Inc., (CVX) Chevron Corp., (XOM) Exxon Mobil Corp., (TLRY) Tilray Inc. CI 2, (CGC) Canopy Growth Corp., (X) United States Steel Corp., (ACBFF) Aurora Cannabis Inc., (COKE) Coca-Cola Bottling Co. Consolidated, (MSFT) Microsoft Corp, (AAPL) Apple Inc.

He has made over 70% on the three semesters combined. Need advice on joining in Spring 19 semester, talk to Joseph! (or Anthony Wuest)

Congratulations, Joseph, on a job well done!





# Woodenlegs Library

woodenlegslibrary.us | library@cdkc.edu | 406-477-8293 | @dullknifelibrary  
Chief Dull Knife College | 1 College Dr, Lame Deer, MT 59043-0098 | cdkc.edu

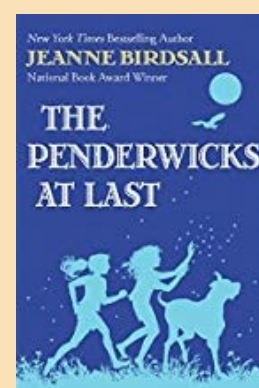
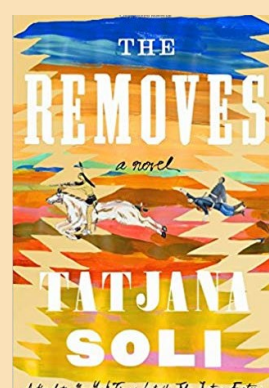
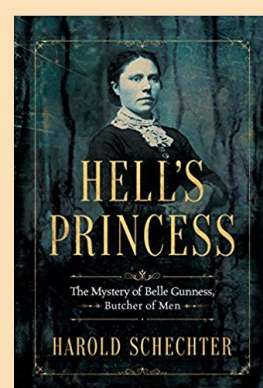
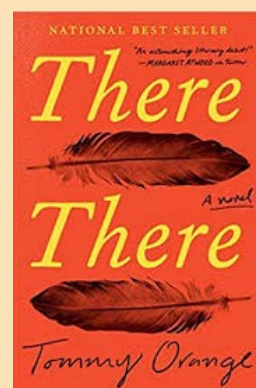
WL is a member of TRAILS (Treasure State Academic Information & Library Services), a consortium of 23 Montana academic libraries, including all 7 tribal colleges. WL library director, Jerusha Shipstead, is the current Chair of TRAILS.

Members realize significant cost-savings on database subscriptions increasing the amount and quality of resources available to MT students and researchers. Member employees share expertise using online tools and serve on a variety of committees. For more information visit <https://trailsmt.org/>

Visit the library periodically to see if Collective Goods is here ~ they have lots of fun items that you can purchase!

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G'naiya Small, a CDKC STEM Intern, has been chosen for a position in the GLOBE Virtual Youth Cohort that will study mosquito habitats. This small exclusive group of 5-7 students was chosen from applicants between 18 and 22 years of age. The group will study mosquito habitats using the Mosquito Habitat Mapper and Land Cover tools found on the NASA GLOBE Observer mobile app. The app is available for no cost in app and Google play stores. Participants will use smartphones or tablets to submit data.

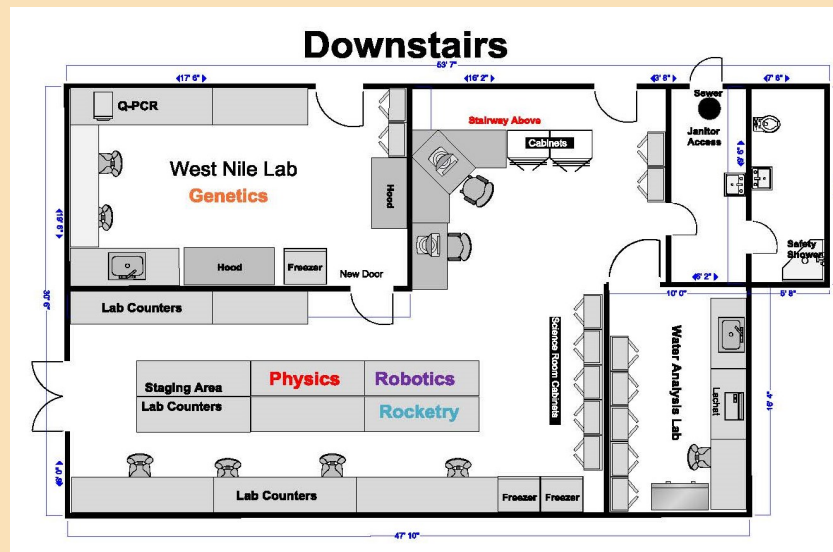
G'naiya will be traveling to Alaska for a weeklong GLOBE training workshop in June, the Arctic and Earth SIGNS Summer workshop. Members of the cohort will have opportunity to participate in regular online meetings to work through planning and implementation of a study of mosquito habitats for a period of approximately one year. Members of the cohort who complete the study will then have opportunity to have support as they create and submit abstracts to scientific conferences (AGU, GA, and GSA as examples) as a way of reporting to the scientific community the findings of their study; and to receive support in application to NASA internships if they desire to apply. It is the hope of the organizers (Bonnie Murray, NASA Langley Research Center and Dr. Russanne Low, Institute for Global Environmental Strategies) that one outcome of this study will be to establish baseline knowledge of known mosquito habitats throughout the US, which can then be continually studied over future years. By observing and recording changes using the GLOBE Observer app, we can better understand the impacts of climate change on mosquito populations and how these changes result in patterns of transmission of vector borne disease to humans and other animals.

We are very excited for G'naiya and are looking forward to having her experience and knowledge when she returns.



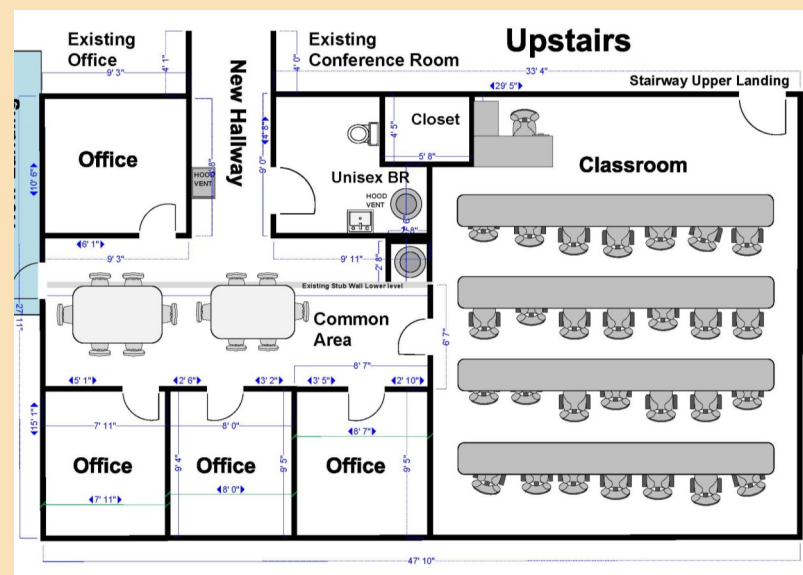


# Science Renovation



You may have noticed changes occurring in the old maintenance shop area of the college. That is because the new maintenance facility is now complete and has been occupied. The old space vacated by maintenance had been slated to be renovated into a single classroom for general use. Before construction began, a new idea was proposed by Jeff Hooker to renovate the main floor into a science research center to house the college's new water quality equipment and allow space for other

research related investigations. The centerpiece water quality instrument (Lachat) came to the college from a grant submitted by Erika Sturn, the new research director, to the National Institutes of Health (NIH). The current West Nile Virus research area was connected to the new lab space and areas for physics, robotics and rocketry were added. Much of the cluttered science lab space across the hall will be reconfigured into better classroom and laboratory space. Working with an architect and the contractor the new plan maintained a new classroom space but moved it upstairs. In addition four new offices spaces, a student lounge area, and a new restroom was created on the second floor. The former office space behind the small science lab will be available to renovate into a full microbiology for science students. Funding for the renovation is provided by the National Science Foundation and USDA.



# Research Opportunities Continued



WEEK OF JULY 22-26

Students will travel to Helena, Montana for a one week workshop offered on the Carroll College campus. Each year an assortment of science topics including GIS/GPS are explored with faculty from Carroll. Chief Dull Knife College is currently a partner with Carroll College in the statewide West Nile

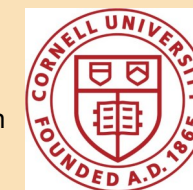


Virus network. Students will stay in a dorm on the Carroll campus.

**Cheyenne Language  
Technologic Interns**

THROUGHOUT SUMMER

Work with Cheyenne language stories and help build a Cheyenne language website and database. This summer a team of interns is going to be working on a project on the Cheyenne language, linguistics, and language revitalization. Interns will work with Cheyenne stories, helping to create a language website and doing research on the language. This is a great way to get involved with research related to language and technology, to help build a resource for Cheyenne language teachers and learners, and learn more about the Cheyenne language.



**SUMMER RESEARCH  
ON CDKC CAMPUS !**



**WEST NILE  
VIRUS RESEARCH**



VARIOUS WEEKS

West Nile Virus research involves many different aspects. First we determine the best locations to trap the mosquitoes that are possible carriers of the disease. Once we have determined the trap locations we set out traps to catch the mosquitos. The mosquitoes are then sorted by species; only three species of mosquitoes that are found in our region can spread West Nile Virus. To sort the catch we use high powered microscopes and physical characteristics of mosquitoes. After we have identified the mosquitoes that can transfer West Nile Virus, we use chemistry and biology to extract pieces of RNA to test for the presence or absence of the virus. The mosquitos are pulverized so that RNA strands can be replicated and identified with use of our PCR.

**WATER QUALITY RESEARCH ON  
THE NORTHERN CHEYENNE RESERVATION**

VARIOUS WEEKS

Students under the direction of Erika Sturn will have the opportunity to participate in a comprehensive research project focused on the two watersheds that fall within the Northern Cheyenne Reservation. This project involves field work (who doesn't love being outside in the summer?) where students will collect surface water samples and data using a variety of techniques. Students will then, for the first time on our campus, analyze the samples for nutrients using new instrumentation in the laboratory.



# CDKC Summer Research

## Opportunities

**CODECHANGERS™**

WEEK OF MAY 28-31

Four days of coding everything from virtual reality goggles to robotic vehicles is offered to kick the summer off. Programmers from CodeChangers will be on the CDKC campus leading this exciting workshop.



UNIVERSITY OF  
**MONTANA**

WEEK OF JUNE 3-7



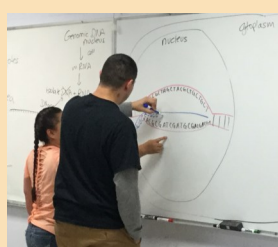
Dr. Aaron Thomas

A new offering this summer will include a week on the UM campus. Research opportunities will be coordinated by Dr. Aaron Thomas, a Navajo Chemical Engineer and professor of chemistry at UM.

**MONTANA  
STATE UNIVERSITY**

**GENETICS AND CELL BIOLOGY at CDKC**

WEEK OF JUNE 24-28



An in-depth look at how organisms transmit genetic information. Led by Dr. Merzdorf and Dr. Forecki of Montana State University. Students will work at the lab on CDKC's campus for this week. A second week with these professors will follow after the Fourth of July break.

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**ZEBRAFISH RESEARCH at MSU**

WEEK OF JULY 8-12

The study of Zebrafish allows student researchers to follow the life cycle of a Zebrafish from one or two cells through adulthood in one short week. This workshop focuses on development of embryos exposed to potentially harmful environments. On MSU's campus.



**COMPUTATIONAL CHEMISTRY**

TO BE ARRANGED



Dr. Neufeldt

The Neufeldt Lab at MSU is offering a unique study opportunity this summer to work in the area of computational chemistry and organic chemistry. Some background in chemistry is helpful, but the experience is designed to let students discover research elements on a major university campus. All housing and food is covered. Dr. Sharon Neufeldt leads the NSF funded project.

# In Their Own Words

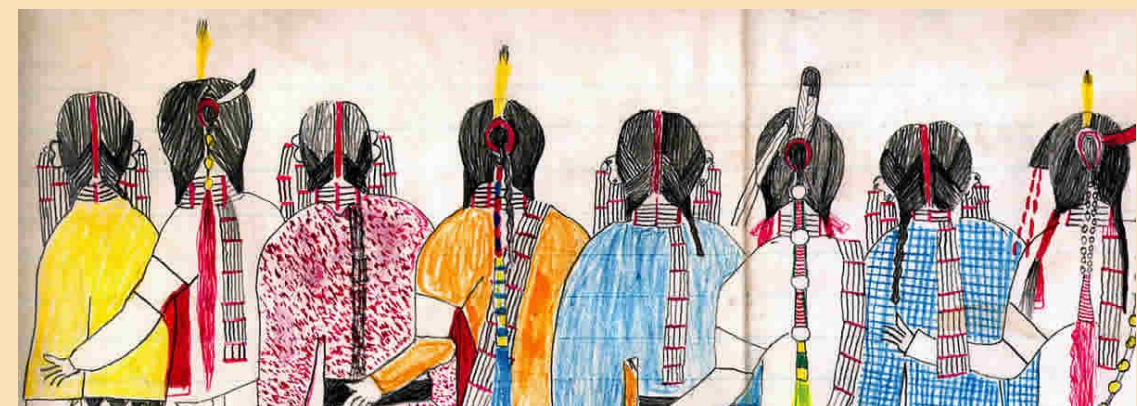
## Student Stories

After completing the intermediate welding program; I sought to enroll again to fine tune my welding skills to compete in various welding jobs. After talking to Dr. Hafer; we figured out



Anthony Young

that I could intern for him, which will lead to fine tune my welding skills and problem solving when heading to a job site. While taking traditional classes and interning as a welder coming to the welding lab to work on various welding projects for Dr. Hafer was a break from classes and homework. Through each project I found peace of mind, because using each skill acquired from welding classes before help shape the future I was uncertain about. When realizing this is the career I want for the rest of my life due to the various skills and knowledge it takes to weld in various welding environments. Wanting to further my knowledge in this field I sought the guidance of my mentor in how to become an apprentice. Learning about various welding apprenticeships, I found one that intrigued my interest which I settled on boiler maker apprenticeship. After graduating from Chief Dull Knife College I plan to enroll in the boiler maker program.

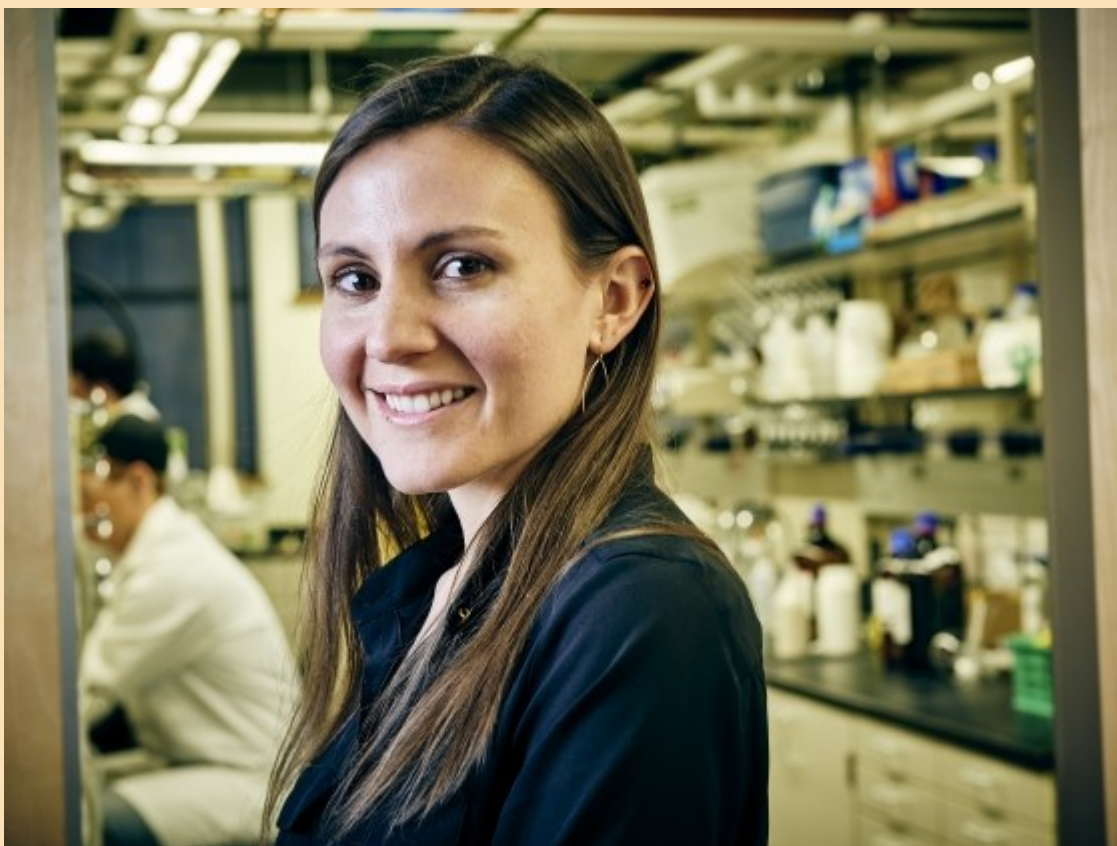




# MSU Professor Partners With Chief Dull Knife College

By Evelyn Boswell for the MSU News Service

February 7, 2019



Sharon Neufeldt, assistant professor of chemistry and biochemistry at Montana State University, received the National Science Foundation's prestigious CAREER award for her research on organic catalyst systems. MSU Photo by Adrian Sanchez-Gonzalez

BOZEMAN -- A Montana State University scientist who loves the art and logic it takes to solve the puzzles of

organic chemistry has won the National Science Foundation's most prestigious award for developing young researchers.

The NSF's Faculty Early Career Development Program, or CAREER, award will give Sharon Neufeldt \$675,000 over five years and allow her to develop catalysts for more selective and efficient chemical reactions. It will also support her as she organizes activities and programs encouraging students at **Chief Dull Knife College in Lame Deer** to participate in research and develop skills in computational chemistry.

"The award will certainly help my research progress much more quickly because it supports some of my students," said Neufeldt, an assistant professor in the [Department of Chemistry and Biochemistry](#) in MSU's [College of Letters and Science](#).

"Dr. Neufeldt is an outstanding scholar and teacher who directs an innovative organic chemistry research program involving graduate and undergraduate students, and this award will provide critical support for these efforts," said Joan Broderick, head of MSU's Department of Chemistry and Biochemistry. Neufeldt explained that catalysts make chemical reactions easier without being consumed in the process. In some ways, she said, they are like gondolas that carry skiers to the top of a mountain. The skiers could hike, but riding is much faster and easier. And the gondolas continue to be useful even after one run. Suppose, though, that bears and humans alike could board the gondolas, Neufeldt said. It wouldn't take long for the gondola operators to look for ways to make humans their only passengers.

In a similar vein, Neufeldt wants to figure out how to make catalysts discriminate between multiple possible interaction sites on a molecule. She will specifically address challenges in cross couplings, a type of chemical reaction that is already popular for making pharmaceuticals, agricultural chemicals and materials such as organic electronics. Cross couplings involve two different molecules, but sometimes those molecules have more than one site where a catalyst can interact.

"Neufeldt originally planned to study viruses in college, but said she fell in love with organic chemistry during her freshman year. As a result, she switched her focus from biochemistry to organic chemistry.

"In organic chemistry, everything is like putting together a puzzle. It's a combination of logic and art," Neufeldt said.

The result is a mixture of products that is associated with increased cost and waste," Neufeldt said.

The goal, Neufeldt said, is to save time, money and resources in the production of chemicals and materials. That will require both laboratory and computational work and the contributions of students in her research group, whose preliminary research was critical to the CAREER proposal Neufeldt submitted to the NSF. She currently supervises four doctoral students, one master's student and three undergraduates.

Neufeldt joined the MSU faculty in 2016 after working as a postdoctoral fellow at the University of California, Los Angeles. She earned her doctorate in chemistry at the University of Michigan in Ann Arbor and her bachelor's degree in chemistry at Northern Arizona University in Flagstaff.

"Sharon is a phenomenal and creative scientist, mentor and role model who is pursuing really important problems at the interface of experimental and computational chemistry," said Melanie Sanford, a renowned chemist who was Neufeldt's mentor at the University of Michigan.

"Her work is providing new insights about the selectivity of these reactions (cross couplings), which allows them to be performed with higher levels of precision in the complex settings that are most relevant to the rapid synthesis of new drugs and materials," Sanford said.

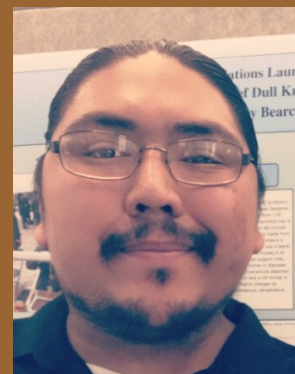
Although Neufeldt was surprised to receive the NSF award on her first try, it was not the first honor for the Arizona native, who was homeschooled until age 12.

As a postdoctoral researcher, Neufeldt received UCLA's first Cram Teacher-Scholar Fellowship. The name refers to Donald J. Cram, one of three Nobel laureates in UCLA's chemistry and biochemistry department. Neufeldt also received UCLA's Hanson-Dow Teaching Award.

As a doctoral student, Neufeldt won the University of Michigan's Research Excellence Award and the University Regents Award. As an undergraduate, before graduating summa cum laude, she won the outstanding senior award in the College of Engineering and Natural Sciences, a Provost's Scholarship and a Hooper Undergraduate Research Fellowship, among other awards. While attending University High School in Tucson, Arizona, she earned a National Merit Scholarship.

As her career progresses, Neufeldt said her overarching research goal is to better understand how catalysts work and how humans can control what those catalysts do.

## Footnote



Troy Bearcomesout worked last summer in Dr. Neufeldt's lab on the MSU campus. He had a rewarding experience which could turn into further employment in her lab. Troy was quite accomplished at "computational chemistry", which gave rise to the current partnership with the Neufeldt Lab at Montana State University. More students will now be able to go to Bozeman and spend a week learning and assisting with research the lab is undertaking.