



David M. Keller
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Chico, CA 95929-0515

September 17, 2015

Dear Personnel Committee:



I'm writing this letter of support for Robin Donatello, who worked with me when I chaired the College of Natural Sciences Poster Session in Spring 2015. Robin played a major role on that committee as she took on the online abstract submission process and compiled the submissions into a title booklet. We had over 80 abstracts submitted, and I heard no complaints about the abstract submission process from anyone. It was a user-friendly system and made the poster session go so much smoother for me as the chair. She then compiled the information into an abstract booklet and a title booklet that we used for the poster session participants. She was also one of the key helpers on the day of the session, and I was glad I could rely on her and take some pressure off of me. Thanks Robin!

Sincerely,

A handwritten signature in cursive script that reads "David Keller".

David M. Keller

2016 NSC Poster Committee

Thursday, November 05, 2015 1:54 PM

Subject	RE: NSC Poster Session - May 10, 2016 from 7am-5:30pm
From	Keller, David
To	Donatello, Robin
Sent	Wednesday, November 04, 2015 2:56 PM

Awesome—thanks Robin. Dave Stachura also volunteered. Maybe you could take the lead since you have the most experience and he can co-lead?

-Dave

From: Donatello, Robin
Sent: Wednesday, November 04, 2015 1:31 PM
To: Keller, David
Subject: Re: NSC Poster Session - May 10, 2016 from 7am-5:30pm

I totally volunteer to chair this committee! I feel I already helped out a significant portion with the abstract organization last year and am really good with logistics.

-Robin

From: Keller, David
Sent: Wednesday, November 4, 2015 1:07 PM
To: Donatello, Robin; Giovanni, Maria; Keller, David; Kipnis, Gayle; Lloro-Bidart, Teresa; Ott, Lisa; Petrova Mayor, Anna; Sarah Anderson; Stachura, David; Teasdale, Rachel; Wiggins, Catherine
Subject: FW: NSC Poster Session - May 10, 2016 from 7am-5:30pm

Hi Poster Committee 2015: Catherine was on the ball. She got a reservation in Colusa Hall for dead week, though we couldn't get Wednesday like last year. Instead we have Tuesday. Thanks Catherine!

In other news, I am unfortunately stepping down from the poster committee for 2016. If anyone would like to get some service credit for chairing a college-level committee, here's a big chance. It takes some planning skills, but nothing too arduous. I will certainly be around to help out if needed and Catherine will again be a big help in the organizing as well. So please let me know if you'd be interested,

-Dave

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From: Wiggins, Catherine



David Stachura, Ph.D.
Assistant Professor
Department of Biological Sciences
California State University, Chico
Chico, CA 95929-0515

Sept 1, 2016

Dear Retention, Tenure, and Promotion Committee Members:

I am writing this letter to strongly support the promotion of Robin Donatello. She is a hardworking, collegial colleague that is an asset to California State University, Chico.

I have known Robin for two years; we both started as Assistant Professors at Chico State at the same time. Over those two years, we have worked closely on two projects, and she has been immensely helpful for their successful completion. I also envision collaborating with her in the future on several Bioinformatics projects that will directly benefit students here at Chico State.

First, we were both co-chairs of the College of Natural Sciences Poster Session in Spring 2016. Robin showed excellent leadership abilities in this role; her enthusiasm and attentiveness to making this event exceptional was evident, and she did a great job of inspiring other people to complete their tasks and to go above and beyond the call of duty. Several students and faculty remarked to me that this poster session was one of the best in recent years. Robin and I worked extremely hard to streamline the implementation of the poster session, which was a little unorganized when we took over. She set up an online database to streamline student abstract submissions, which made that process extremely easy; in past years it was a challenge to handle the 80-90 student submissions from different departments. She also set up a Google Drive folder so that we could manage all of the activities that the other members of the committee needed to complete. She also implemented new judging criteria for the posters, which was well received by students and faculty. Most importantly, Robin set up all of this information so that it is easy to access and transfer in the future; anyone coming into this committee leadership role will now have a clear grasp of when and what tasks need to be completed and templates for their completion. This transparency of tasks and easing their completion is exactly what was needed for this committee; it takes several months to get all the pieces in place to make it successful. Robin was a large part of why the poster session was successful. And, she is a major reason that it will run smoother and more efficiently in the future.

The second project that Robin and I are collaborating on is a revision of a manuscript that I recently submitted. A reviewer asked for a number of changes to the manuscript, which were largely based on a question of probability and statistical significance. I contacted Robin to discuss these issues, and she has been extremely helpful, designing computer simulations that model the exact problems that the reviewer had with our original manuscript. She has spent hours of her time designing models, testing them, and



discussing the manuscript and possible interpretations of my data with me. We will resubmit these studies soon, and Robin's work on them will be essential for their successful completion.

Finally, I am encouraging several of my students that are interested in pursuing a career in Bioinformatics to collaborate with Robin. I see a strong potential for us to work together in the future to train biologists to perform the analysis of large data sets, design programs to deal with these data sets, and overall train biologists to deal with probability and statistics. We have spoken about potential projects, and hope to have students start analyzing potential projects this semester. These are collaborative, impactful studies, and students currently do not have the ability to make sense of large biological datasets. As this skill will be essential for them in the future, Robin and I are designing several projects that will give students more real-life, hands-on opportunities to analyze the intersection of biology and mathematics.

If you have any further questions, please feel free to contact me directly.

Sincerely,

A handwritten signature in blue ink, appearing to read 'D. Stachura', with a long horizontal line extending to the right.

David Stachura, Ph.D.



College of Natural Sciences 12th Annual Poster Session

Tuesday May 10th, 2016
Colusa Hall

WELCOME

This session was established to highlight research conducted by the College of Natural Sciences faculty and their student researchers. The session embodies the vibrant research environment of the College, and excitingly, several of these posters will also be displayed at CSU Chico's Gateway Science Museum.

AWARDS CEREMONY

CSU Chico faculty will select posters that they deem meritorious in the categories of Student Class Projects, Undergraduate/Faculty Research, and Graduate/Faculty Research. Poster session attendees will also select posters to be awarded the title of "People's Choice" within these categories.

Awards will be presented to the winners in the student and faculty research categories during the awards ceremony at 3:30 PM. The awardees will receive a certificate and their names will be added to a plaque displayed outside the College of Natural Sciences office in Holt Hall.

THANK YOU!

The poster session committee would like to extend their sincerest thanks to the faculty judges for their efforts. The committee would also like to thank all of the poster session attendees. This year's poster session committee members are:

- David Stachura (BIOL) (co-chair)
- Robin Donatello (MATH) (co-chair)
- Catherine Wiggins (NSC)
- Carolynn Arpin (CHEM)
- Gayle Kipnis (NURS)
- Maria Giovanni (NFSC)
- Anna Petrova-Mayor (PHYS)
- Anne Stephens (SCED)
- Kristen Kaczynski (GEOS)

POSTER SESSION SCHEDULE

Set up	9:00 am – 10:00 am
Open to General Public	10:00 am – 4:00 pm
Presenters at Posters	1:00 pm – 3:30 pm
Award Ceremony	3:30 pm – 4:00 pm

POSTER TITLES

FACULTY RESEARCH (F)

<i>ID</i>	<i>Authors</i>	<i>Title</i>
F1	Van Dusen B, CSU Chico, Chico, CA	LEARNING ASSISTANT SUPPORTED STUDENT OUTCOMES (LASSO)
F2	Atwell LL, CSU Chico, Chico, CA; Zhang Z, Oregon Health & Science University, Portland, OR; Mori M, Oregon Health & Science University, Portland, OR; Farris P, Oregon Health & Science University, Portland, OR; Vetto JT, Oregon Health & Science University, Portland, OR; Naik AM, Oregon Health & Science University, Portland, OR; Oh KY, Oregon Health & Science University, Portland, OR; Thuillier P, Oregon Health & Science University, Portland, OR; Ho E, Oregon State University, Corvallis, OR; Shannon J, Oregon Health & Science University, Portland, OR	SULFORAPHANE BIOAVAILABILITY AND CHEMOPREVENTIVE ACTIVITY IN WOMEN SCHEDULED FOR BREAST BIOPSY
F3	Shapiro R, CSU Chico, Chico, CA; LaLonde, S CNRS-Laboratoire Domaines Océaniques, Plouzané, France	KINGSTON PEAK IRON FORMATION (NEOPROTEROZOIC, MOJAVE DESERT): TECTONICS NOT SNOWBALLS

GRADUATE / FACULTY RESEARCH (GF)

<i>ID</i>	<i>Authors</i>	<i>Title</i>
GF1	Berrun A, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA	NOVEL GENES IN VERTEBRATE HEMATOPOESIS
GF2	Brooke CG, CSU Chico, Chico CA; Fleming EJ, CSU Chico, Chico CA	MOBILIZING MERCURY WITH MICROBIAL RUST
GF3	Vasquez CA CSU Chico, Chico, CA; Clifford DE CSU Chico, Chico, CA; Neyman Morris M CSU Chico, Chico, CA; Mauldin K CSU San Jose, San Jose, CA	DIETING AND WEIGHT CYCLING ARE ASSOCIATED WITH WEIGHT STIGMA
GF4	Metzger H, CSU Chico, Chico CA; Stachura DL, CSU Chico, Chico CA	DIFFERENTIAL EFFECTS OF BCL-2 OVER-EXPRESSION IN MULTIPLE HEMATOPOIETIC CELL LINEAGES
GF5	Smith JS, CSU, Chico, Arpin C, CSU, Chico, Stachura DL, CSU, Chico	THE ROLE OF GROWTH RECEPTOR BOUND PROTEIN-2 (GRB2) IN ACUTE MYELOID LEUKEMIA (AML)
GF6	Kolstad J.J, Kaczynski K., Riggins S., Matiassek S. CSU Chico, Chico CA	DISTRIBUTION AND SOURCE IDENTIFICATION OF POLYCHLORINATED DIBENZO-P-DIOXINS AND POLYCHLORINATED DIBENZOFURANS IN SURFACE SOILS AND CHICKEN EGGS IN THE VICINITY OF OROVILLE, CALIFORNIA

<i>ID</i>	<i>Authors</i>	<i>Title</i>
GF7	McClure J, CSU Chico, Chico CA; Clifford D, CSU Chico, Chico, CA; Morris M CSU Chico Chico, CA; Cootsona G, CSU Chico, Chico, CA	DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A FAITH BASED HEALTH AT EVERY SIZE (HAES) INTERVENTION
GF8	Rosshirt LB, CSU Chico, Chico, CA; Holland J, CSU Chico, Chico, CA; Hart S, CSU Chico, Chico, CA; Giovanni M, CSU Chico, Chico, CA; Giampaoli J, CSU Chico, Chico, CA;	THE ASSOCIATION BETWEEN PICKY EATING AND VEGETABLE PREFERENCE WITH BITTER TASTER STATUS, PARENTAL FEEDING PRACTICES, AND BREASTFEEDING EXPERIENCES AMONG PRESCHOOL CHILDREN
GF9	Diaz PE, CSU Chico, Chico, CA; Keller D, CSU Chico, Chico, CA	PANCREATIC ALPHA CELL GROWTH CORRELATED TO MICRO RNA 375
GF10	Cobb S, CSU Chico, Chico, CA; Wolfe G, CSU Chico, Chico, CA	EAT DESSERT FIRST! MARINE MICRO-PREDATOR PREFERS SPECIFIC SUGAR-COATED PREY
GF11	Barton-Wechsler, S, CSU Chico, Chico, CA; Atwell LL, CSU Chico, Chico CA; Bogale, A, Oklahoma State University, Stillwater OK; Choi, J, Oregon State University, Corvallis, OR; Nkrumah-Elie, Y, Oregon State University, Corvallis, OR; Stoecker, B, Oklahoma State University, Stillwater, OK; Ho, E, Oregon State University, Corvallis, OR	PLASMA METABOLITE PROFILES IN ETHIOPIAN WOMEN FOLLOWING ZINC SUPPLEMENTATION
GF12	Silliman K, PhD, Magalis R, Giovanni M, Department of Nutrition and Food Science, California State University, Chico, CA	WHOLE GRAIN FOODS: ARE KNOWLEDGE, ATTITUDE, SENSORY LIKING AND INTAKE RELATED?
GF13	Moore TJ, CSU Chico, Chico, CA; Monohan C, The Sierra Fund, Nevada City, CA; Matiasek S, CSU Chico, Chico, CA; Mehl SW, CSU Chico, CA, Chico, CA	SHALLOW SUBSURFACE GROUNDWATER FLOW PATHS AND WATER QUALITY IN THE MALAKOFF DIGGINS HYDRAULIC PIT

STUDENT CLASS PROJECTS (S)

<i>ID</i>	<i>Authors</i>	<i>Title</i>
S1	Boydston, K M, CSU Chico, Chico, CA; Mayr, A L, CSU Chico, Chico, CA	MENTAL HEALTH AND STIGMA AWARENESS
S2	Walker C, CSU Chico, Chico, CA; Balacy A, CSU Chico, Chico, CA; Silva L, CSU Chico, Chico, CA	SEXUAL ASSAULT AWARENESS
S3	Knipp, KJ, CSU Chico, Chico, CA; Freeborn, AN, CSU Chico, Chico, CA	THUMBS UP FOR GERM-FREE HANDS
S4	Bettencourt, Brian, A. CSU Chico, Chico, Ca	ASSESSMENT OF LEACHING CHEMICAL CONSTITUENTS INTO LOCAL DRAINAGES ADJACENT TO THE HUMBOLDT ROAD DUMP
S5	Lona ID, CSU Chico, Chico, CA, Sawyer CM, CSU Chico, Chico, CA	DETERMINING PRESENCE OF LEPIDOPTERA SPECIES OF INTEREST IN REGIONS OF BUTTE COUNTY

<i>ID</i>	<i>Authors</i>	<i>Title</i>
S6	Banet AI, CSU Chico, Chico, CA; Hatfield CA, CSU Chico, Chico, CA; Kaczynski KM, CSU Chico, Chico, CA; Alexander F, CSU Chico, Chico, CA	APPLICATION BASED SERVICE LEARNING: WORKING ACROSS CLASSES AND DEPARTMENTS TO ENGAGE STUDENTS IN A CITY-UNIVERSITY PARTNERSHIP
S7	Kurth, G. W, CSU Chico, Chico,	IS WIND POWER IN THE FUTURE FOR RICHARDSON SPRINGS?
S8	Allen C, Bula M, De Witt N, Garrido A, Guglielmo A, Napier A, Nitti C, Purcell C, Rupp D, Stoll Z, Aird H, CSU Chico, Chico, CA	DESCRIBING THE GENESIS OF EARLY CRETACEOUS SIERRA NEVADA PLUTONS IN THE FEATHER RIVER VALLEY
S9	Scaroni, J.C Oroville, CA; Yang X.C. Oroville,CA	HOLISTIC APPROACH TO HEALTH AND WELLNESS: SENIOR COMMUNITY LIVING NURSES HELPING VETERANS
S10	Bracewell JA, CSU Chico, Chico, CA; Wineland SA, CSU Chico, Chico, CA	
S11	Hernandez JL, CSU Chico, Chico CA; Boettger JM, CSU Chico, Chico CA; Larson CM, CSU Chico, Chico CA;	CANCER AWARENESS
S12	Bunting C.B., CSU Chico, Chico, CA; Bunting C.B., CSU Chico, Chico, CA; Van Sickle H.N., CSU Chico, Chico, CA	CALIFORNIA CONSERVATION CORP EDUCATION ABOUT SEXUAL HEALTH AND FAMILY PLANNING
S13	Evans M, CSU Chico, Chico, CA; Castro K, Chico, Chico, CA; Pressnall G, Chico, Chico, CA; Power K, Chico, Chico, CA	GIRLS ON THE RUN
S14	Michaela K King, CSU Chico, Chico, CA; Jennifer L Stevens, CSU Chico, Chico, CA	HUNGRY WILDCATS FOOD PANTRY
S15	Balderas P, CSU Chico, Chico, CA; O'Malley, S, CSU Chico, Chico, CA; Vojnovic, T, CSU Chico, Chico, CA	HEALTH AND NUTRITION EDUCATION AT FOUR WINDS OF INDIAN EDUCATION
S16	Cayaban JRC, CSU Chico, Chico, CA	DEVELOPING A MODEL TO DETERMINE THE LEVEL OF SUSTAINABILITY AND ETHICAL CONSIDERATIONS OF AN ORGANIZATION'S EXISTING FOOD SUPPLY CHAIN SYSTEM
S17	Krapf, R E, CSU Chico, Chico CA	GOLDIELOCKS DOSE OF H2O: TESTING IDEAL AMOUNTS OF WATER FOR RADISH SEEDS IN A CLASSROOM SETTING
S18	Anderson, Rory J, CSU Chico, Chico, CA	EDUCATION AND ACCESS TO RESOURCES FOR THE HOMELESS
S19	Anderson SE, CSU Chico, Chico, CA; O'Sullivan BC, CSU Chico, Chico, CA	DENIM DAY AT SHASTA COLLEGE
S20	Hunt, WG, CSU, Chico, CA; Brown, CM, CSU Chico, CA	SURVIVAL SERIES HEALTH EDUCATION
S21	Yun H, CSU Chico, Chico, CA	HOW STRONG EL NINO YEAR IN 1997-98 AFFECTED ALMOND YIELD IN CALIFORNIA?

STUDENT CLUBS

<i>ID</i>	<i>Authors</i>	<i>Title</i>
C1	Escobar K, CSU Chico, Chico, CA	OMICRON THETA EPSILON

UNDERGRADUATE / FACULTY RESEARCH (UF)

<i>ID</i>	<i>Authors</i>	<i>Title</i>
UF1	Garrido, A, California State University Chico, Geological & Environmental Sciences, Chico, CA 95929-0205, United States Teasdale, R, California State University Chico, Geological & Environmental Sciences, Chico, CA 95929-0205, United States	QUANTIFICATION OF THE GROUNDMASS CRYSTALS IN A STRATIGRAPHIC SECTION OF LOVEJOY BASALT FORMATION AT BIG CHICO CREEK
UF2	Chihogi K and Rosado A, CSU Chico, Chico, CA	PERSONAL WEATHER STATION SITING AND COMPARISON TO NATIONAL STANDARDS
UF3	Anenberg, A., CSU Chico, Chico, CA; Matiassek, S., CSU Chico, Chico, CA; Von Wedel, R., CSU Chico, Chico, CA	ASSESSMENT OF WATER TREATMENT THROUGH SUSTAINABLE AQUAPONICS
UF4	Valceschini AM, CSU Chico, Chico, CA; Bewely B, CSU Chico, Chico, CA; Ott L, CSU Chico, Chico, CA	SYNTHESIS OF DEEP EUTECTIC SOLVENTS FROM BIODIESEL WASTE GLYCEROL
UF5	Patton T, CSU Chico, Chico, CA; Kaiaokamalie A, CSU Chico, Chico, CA	VESTA HOLT HALL ENERGY CONSUMPTION
UF6	Russell BJ, CSU Chico, Chico, CA; Wolfe GV, CSU Chico, Chico, CA	IT'S WHAT ON THE OUTSIDE THAT COUNTS: LOCALIZING NEUTRAL LIPIDS IN HAPTOPHYTE ALGAE TO THE CELL WALL USING REVERSE MICELLE EXTRACTION
UF7	Henderson B, CSU Chico, Chico, CA; Teasdale R, CSU Chico, Chico, CA; Wenner JM, University of Wisconsin Oshkosh, Oshkosh, WI; Lenz Q, University of Wisconsin Oshkosh, Oshkosh, WI	SPINEL COMPOSITIONS IN BASALTS OF THE POISON LAKE CHAIN, NORTHERN CALIFORNIA
UF8	Gill, CJ, CSU Chico, CA	EARTHWORMS: CAN DIFFERENT DIETS PLAY A ROLE ON THE EARTHWORMS REPRODUCTIVE AND GROWTH RATES?
UF9	Park, C, CSU Chico, Chico, CA, Shoff, M, CSU Chico, Chico, CA, Mann, M, CSU Chico, Chico, CA	OPTIMIZING GROWTH CONDITIONS OF LIPID RICH MICROALGAE FOR SUSTAINABLE FISH FEED
UF10	Lomeli DR, CSU Chico, Chico, CA; Meyer D, CSU Chico, Chico, CA; Schoff M, CSU Chico, Chico, CA	DEVELOPING METHODS TO MONITOR MICROBIAL NUMBERS AND NUTRIENT CONCENTRATIONS IN NSR'S BIOGAS REACTOR
UF11	Lackenbauer DE, CSU Chico, Chico, CA	BIODIVERSITY IN THREE SISTERS SPRINGS BCCER, CALIFORNIA AND THE THEORY OF ISLAND BIOGEOGRAPHY
UF12	Antonio A, CSU Chico, Chico, CA; Russo J, CSU Chico, Chico, CA; Paulo J, CSU Chico, Chico, CA; Mendez J, CSU Chico, Chico, CA; Poniatowski J, CSU Chico, Chico, CA; Hopelian D, CSU Chico, Chico, CA; French W, CSU Chico, Chico, CA; Wright D, CSU Chico, Chico, CA; Thao ML, CSU Stanislaus; Edwards D, CSU Chico, Chico, CA; Kirk L, CSU Chico, Chico, CA; Hanne L, CSU Chico, Chico, CA	CHARACTERIZATION OF THE BIOPLASTIC DEGRADING ENZYMES ISOLATED FROM SOIL BACTERIA

<i>ID</i>	<i>Authors</i>	<i>Title</i>
UF13	Aggio J, CSU Chico, Chico, CA; Brown A, CSU Chico, Chico, CA; Wright F, CSU Chico, Chico, CA; Marquez G, CSU Chico, Chico, CA; Berrun A, CSU Chico, Chico, CA; Shah A, CSU Chico, Chico, CA; Harris E, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA.	ZEBRAFISH CAUDAL HEMATOPOIETIC EMBRYONIC STROMAL TISSUE (CHEST) CELLS SUPPORT HEMATOPOIETIC STEM AND PROGENITOR CELL (HSPC) EXPANSION
UF14	Marks C, CSU Chico, Chico, CA; Yepez D, CSU Chico, Chico, CA; Hartland T, CSU Chico, Chico, CA;	VECTOR-VALUED MODULAR FORMS
UF15	Welemin EJ, CSU Chico, Chico, CA; Kaczynski KM, CSU Chico, Chico, CA	IMPACT OF MOWING AND BURNING TREATMENTS ON YELLOW STARThistle POPULATIONS
UF16	Ayars E, CSU Chico, Chico, CA; Thacker B, CSU Chico, CA	MICROCONTROLLER-BASED MECHANICAL CHAOTIC OSCILLATOR
UF17	Wright F, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA	VITAMIN D INCREASES HEMATOPOIETIC STEM AND PROGENITOR CELLS
UF18	Marquez-Arreguin G, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA	REGULATORY EFFECTS OF CANNABINOID RECEPTOR-2 ON PROLIFERATION OF HEMATOPOIETIC STEM CELLS VIA AM1241 AND AM630.
UF19	Lewis G, CSU Chico, Chico, CA Teasdale R, CSU Chico, Chico, CA	TEXTURAL VARIATIONS OF PRIMITIVE BASALTS IN THE POISON LAKE CHAIN, LASSEN REGION OF NORTHERN CALIFORNIA
UF20	Valente, G, CSU Chico, Chico Ca; Monohan, C PhD, The Sierra Fund, Nevada City, CA, CSU Chico, Chico, CA	FISH TISSUE MERCURY CONCENTRATIONS IN BIOSENTINEL SPECIES ONCORHYNCHUS MYKISS AND SALMO TRUTTA ABOVE AND BELOW RESERVOIRS ON THE BEAR RIVER
UF21	Castellanos, J, CSU Chico, Chico, CA; Mattingly, A, CSU Chico, Chico, CA; Murasko, L, CSU Chico, CA	DANCE: MIND, BODY, & SOUL
UF22	Calvillo Solis, Janette, CSU Chico, Chico, CA; Holcombe, Lori, CSU Chico, Chico, CA	THE BINARY NUMBER SYSTEM
UF23	Juette, E., CSU Chico, Chico, CA; Kiassat, N., CSU Chico, Chico, CA; Zhang, J., CSU Chico, Chico, CA	SYNTHESIS OF ORGANIC LINKER MOLECULES TO COORDINATE NANOMATERIALS
UF24	Radick A, McKinley A, Young J; CSU Chico, Chico, CA	AN APPLICATION OF THE MACH-ZEHNDER INTERFEROMETER TO ILLUSTRATE THE FRESNEL-ARAGO POLARIZATION LAWS
UF25	Gladfelder J, CSU Chico, CA; Arpin C, CSU Chico, CA	SYNTHESIS OF DIMERIC BINDERS OF THE GRB2 SH2 DOMAIN
UF26	Caravez, J, Butte College, Oroville, Ca; Henderson, J, Butte College, Oroville, Ca; Erickson, Z, Butte College, Oroville, Ca; Shippen, A, Butte College, Oroville, Ca; Keys, R, Butte College, Oroville, Ca; Franklin, R, Butte College, Oroville, Ca; Faulk, C, Butte College, Oroville, Ca; Matiassek, M, Butte College, Oroville, Ca.	BIOFILTRATION OF PARKING LOT STORMWATER RUNOFF USING AN ENGINEERED BIOSWALE ON THE BUTTE COLLEGE MAIN CAMPUS
UF27	Embola J., Ferrante J., Gonzalez N., Holland J., Mal C., Porras A., Rodriguez J., Winterton K., CSU Chico, Chico, CA.	FOOD PURCHASING BEHAVIORS AMONG C.S.U. CHICO STUDENTS

<i>ID</i>	<i>Authors</i>	<i>Title</i>
UF28	Kelsey A, CSU Chico, Chico CA; Salvador G, CSU Chico, Chico, CA	HEART HEALTHY
UF29	Moncrief K, CSU Chico, Chico, CA	METHODS OF OBTAINING POPULATION ESTIMATES OF SPRING RUN CHINOOK SALMON, ONCORHYNCHUS TSHAWYTSCHA IN BUTTE CREEK
UF30	Ball D, CSU Chico, Chico ,CA; Rubottom LCSU Chico, Chico ,CA; Schempp T, CSU Chico, Chico, CA	SYNTHESIS OF DEGRADATION PRODUCTS OF CLOTHIANIDIN, BENZOBICYCLON, IMAZOSULFURON
UF31	Novak, LL, CSU Chico, Chico, CA	THE IMPACT OF DROUGHT ON THE RADIAL GROWTH OF PINUS LAMBERTIANA (SUGAR PINE)
UF32	Szymanski M, CSU Chico, Chico, CA; Teasdale R, CSU Chico, Chico, CA	GROUNDMASS CRYSTALLINITIES OF PROXIMAL AND DISTAL LAVAS FROM CINDER CONE, LASSEN VOLCANIC FIELD
UF33	TRIASI, MJ, CSU CHICO, CHICO CA; MATIASEK S, CSU CHICO, CHICO CA	CHANGES IN PHYSICAL AND CHEMICAL PARAMETERS OF STORMWATER AFTER BIOFILTRATION
UF34	Barnett, J. L.; Cherrette, V. ; Hutcherson, C.; So, M. C., CSU Chico, Chico, CA	FABRICATION AND CHARACTERIZATION OF SOLUTION-PROCESSED PEROVSKITE SOLAR CELLS
UF35	Holmberg-Douglas N, CSU Chico, Chico, CA; Sampson E, CSU Chico, Chico, CA; Arpin C, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA	DEVELOPMENT OF POTENTIAL ANTI-CANCER DRUGS
UF36	Wickham P, CSU Chico, Chico, CA; Liles G, CSU Chico, Chico, CA; Brown D, CSU Chico, Chico, CA;	EFFECTS OF TAILINGS TREATMENTS ON CELLULAR RESPIRATION
UF37	Steinbacher, M. Peyton CSU Chico, Chico, CA; Matiassek, Dr. Sandrine, CSU Chico, Chico, CA	MINIMIZING THE EFFECT OF URBANIZATION WITH THE USE OF BIOSWALES
UF38	Belmonte RL, CSU Chico, Chico, CA; Wilson GR, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA	MODELING HUMAN BRAIN MALFORMATIONS WITH ZEBRAFISH
UF39	Christensen SR, CSU Chico, Chico, CA; Briseno BJ, CSU Chico, Chico, CA; Bradford KA, CSU Chico, Chico, CA	IDENTIFYING BARRIERS TO FOOT HEALTH WITHIN THE TRANSIENT POPULATION.
UF40	Sarah Knudsen, CSU Chico, Chico, CA; Dr. Anna Petrova-Mayor CSU Chico, Chico, CA	PERFORMANCE OF METAL-COATED MIRRORS WITH DIFFERENT PROTECTIVE DIELECTRIC LAYERS PART 2: THEORY
UF41	Carlson S, Wilder C, Worden R, CSU Chico, Chico, CA	MEASURING TRAIL EROSION IN UPPER BIDWELL PARK
UF42	Nies S.M., CSU, Chico, Chico, CA; Shapiro R.S., CSU Chico, Chico, CA, Lalonde S, Laboratoire Domaines Océaniques, Brest, France	PRESERVATION OF REE AND FE ISOTOPES IN ALTERED STROMATOLITES AND THE PALEO-ENVIRONMENTAL RECORD
UF43	Bauer S, CSU Chico, Chico, CA; Matiassek S, CSU Chico, Chico, CA	EFFECT OF BIOFILTER COMPOSITION ON NUTRIENT REMOVAL FROM STORMWATER
UF44	Carroll SJ, CSU Chico, Chico, CA; Matiassek S, CSU Chico, Chico, CA	HYDROLOGIC IMPACT OF MEDIA COMPOSITION IN BIOFILTRATION SYSTEMS

<i>ID</i>	<i>Authors</i>	<i>Title</i>
UF45	Elliott SA, CSU, Chico, Chico, CA	ASSESSING SNOW LEOPARD RELATEDNESS USING HAPLOTYPE ANALYSIS
UF46	Van Cleave V, and Giovanni M, CSU Chico, Chico, CA	USING FOOD CENTERED EDUCATIONAL ACTIVITIES TO REDUCE DISORDERED EATING BEHAVIORS IN INDIVIDUALS WITH AUTISM SPECTRUM DISORDER
UF47	Aggio J, CSU Chico, Chico, CA; Stachura DL, CSU Chico, Chico, CA.	EFFECT OF LIGHTING CONDITIONS ON ZEBRAFISH REPRODUCTIVE EFFICIENCY

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CNS-POSTER-SESSION

Abstract submissions for the Chico State College of Natural Sciences Poster Session.

2017 College of Natural Sciences Poster Session

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California State University,
Chico



13th Annual
College of Natural Sciences
Poster Session

Short Program Booklet

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This session was established to highlight research conducted by the College of Natural Sciences faculty and their student researchers. The session embodies the vibrant research environment of the College, and excitingly, several of these posters will also be displayed at CSU Chico's Gateway Science Museum.

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Set up 8:30 am - 10:00 am
Open to General Public 10:00 am - 4:00 pm
Presenters at Posters 12:30 pm - 2:30 pm
Award Ceremony 3:30 pm - 4:00 pm

This program booklet contains titles only. Full abstracts are available on the college website.

POSTER INFORMATION

Faculty

ID	Author List	Title
F1	Monica C. So	Solving Challenges in Sustainability Using Self-Assembled Nanomaterials
F2	Ben Van Dusen, Jayson Nissen, Mahendra Thapa, Angelica De La Torre, and Daniel Caravez	The many faces of equity: The system impact of Learning Assistants in physics

Graduate/Faculty Research

ID	Author List	Title
GF1	Gauri Karnik, Keiko Goto, Shannon Pierson, Joan Giampaoli	Examination of cue-elicited food craving and emotional eating among elementary school children.
GF2	Allen LaGrange, Kristen Kaczynski	A Comparison Between the Soil Seed Bank and Modern Vegetation in a Wet Meadow, Papoose Meadows, CA
GF3	Silena Barton-Wechsler, David L Stachura, Emily Ho, Lauren Housley	Effects of Zinc Supplementation on Carnitine and Lactate Concentrations in Cultured Liver Cells
GF4	Brandon Ertis, Carrie Monohan, Allan James, David Brown	Using LIDAR and ArcGIS to describe geomorphometric characteristics of historical hydraulic mining features along the North Fork of the Yuba River to inform ranking and prioritization efforts.
GF5	Sommer Casady, Hannah Aird	Exploration of a High-Sulfidation Epithermal Deposit within the Antelope Valley Volcanic Center, Sierra County California
GF6	John Kelley, Carrie Monohan, Sandrine Matiassek, David Brown	Study of the Horse Valley Creek Debris Control Dam
GF7	Cindy Wolff, Keiko Goto, Naomi Stamper	Health Partnerships Optimize Community Health Needs Assessment Outcomes
GF8	Spencer J. Carroll, Michael G. Matiassek, Sandrine J. Matiassek	Pollutant Retention Analysis in a Biofiltration System
GF9	Ed Slattery, Troy Cline, Lauren Housley	Effects of sulforaphane in the tumor microenvironment of triple-negative breast cancer
GF10	Hannah Metzger, David Stachura	Differential Effects of bcl-2 Overexpression in Various B Lymphocyte Populations
GF11	Charles G. Brooke, Emily J. Fleming Nuester	The Effect of Biotic Iron Cycling on Mercury Transformations in an Estuarine Salt Marsh
GF12	Arturo Berrun, David Stachura	Ism-1 depletion negatively affects vertebrate hematopoiesis
GF13	Pablo Diaz, Grace Prator, Melissa French, David M. Keller	microRNA-375 has opposing effects on cell proliferation in pancreatic alpha and beta cells
GF14	Lauren Krohn, Joan Giampaoli, Keiko Goto, Matthew Stone, Jennifer Dye	Local Procurement in School Foodservice

ID	Author List	Title
GF15	Sean Lucas, Jay Smart	Using Modified False-Color Imagery to Emphasize Geologic Features in the Coyote Mountains, Imperial County, California (Research Update)
GF16	Donald Beck, Keerthana Sekar, Stacey Schultz-Cherry, Troy Cline	Highly Pathogenic H5N1 Influenza Virus Restricts IFN-Gamma Responses in Macrophages in a Replication-Dependent Manner
GF17	Shannon Pierson, Shelly Hart, Keiko Goto, Joan Giampaoli	Development and evaluation of the mindful eating questionnaire for children
GF18	Shannon Pierson, Keiko Goto, Joan Giampaoli, Alyson Wylie	Impact of a pilot mindful eating intervention on food-related behaviors among elementary school students and parents
GF19	Ryan Stolenberg	Water Electrolysis System Optimization in a Microgrid

Undergraduate/Faculty Research

ID	Author List	Title
UF1	Dennis A. Hopelian, Sandrine J. Matiassek	Quantification of Hydrocarbons from Aqueous Samples by Gas Chromatography
UF2	Tanya Schmidt, Matt Boice, Omar Pulido, David Stachura	kal1b Reduction Decreases Vertebrate Blood Cells
UF3	Charles Payne, Daniel Wheeler, John Robertson	Measuring Femtosecond Molecular Dynamics
UF4	Alyssa Bowsby, Joshua Gladfelder, Dr. Carolyn Arpin	Synthesis of a known binder of the GRB2 SH2 domain from naphthaldehyde
UF5	Elizabeth M. Pham, Gordon V. Wolfe	Determining the Surface Free Energy of Marine Alga <i>Emiliania huxleyi</i> with Spectrophotometry
UF6	Nancy De Witt, Ceara Purcell, Hannah Aird	Au and Ag Analysis of the Ann Mason Area, Yerington Nevada
UF7	Dylan Anderson, Gabrielle Cahill, Courtney Copper, Chad Faulk, Noah Sammul, Michael Matiassek	BWELL - Biofiltration Wetland Educational and Living Laboratory
UF8	Chelsea L. Meddings	Efficacy of California Native Drought-tolerant Plants at Heavy Metal Removal from Urban Stormwater in Biofiltration Systems
UF9	Stephanie Aguiar, Sofia Rodriguez, Tina Hanson, David Stachura	Analysis of novel inhibitors of the GRB2 SH2 domain that decrease proliferation in chronic myeloid leukemia
UF10	Elizabeth Bianchini, Analucia Barragan Trejo, Raymond Bogiatto, Robin Donatello, Magdalena Plancarte, Walter Boyce, Troy Cline	Isolation and characterization of avian influenza viruses in Northern California
UF11	Connor J. Hutcherson, Dr. Monica C. So	Temperature dependence of solution processed Perovskite solar cells
UF12	Kyle Rocha-Brownell, Pierre Drian, David Richter, Peter Sullivan, Shane Mayor	Evaluation of a Wavelet-Based Optical Flow Algorithm through the Use of Large Eddy Simulation
UF13	Matt Lemon, Amber Williams, Joshua Crane, Annie Valenschini, Dr. Lisa Ott, Dr. Janine Stone, Dr. Jude Bayham	DES Solvents from Biodiesel from Biodiesel Waste
UF14	Jeremy L. Barnett, Nicole D. Mackie, Dr. Monica C. So	The Effects of Water on Perovskite Solar Cells
UF15	Richard C. Vitamanti, Sandrine J. Matiassek	Media Effects on Nutrient Removal by Biofiltration Systems
UF16	William Mixter, Jason Mickel, Michael Doris, Joseph Levine, Logan Storm, Carissa Leville, Austin Pollard, Nathan Fullmer, Dr. Joseph Pechkis, Dr. Anna Petrova-Mayor, and Dr. Hyewon. K. Pechkis	The Coolest Matter in the Universe: A Pathway to Ultracold Atoms and Bose-Einstein Condensates
UF17	Charlotte Park, Jacob Kalbfleisch, Joshua Gladfelder, Dr. David Ball	Synthesis of a degradation product of a herbicide, Benzobicyclon
UF18	Angelica Rodriguez, Chris Allen, Rachel Teasdale	Monitoring hydrothermal water temperature and composition at the Lassen Volcanic Center (LVC), Southern Cascades
UF19	Xochith Herrera, Manher Jariwala, Jayson Nissen, Eleanor Close, Ben Van Dusen	Participation Rates of In-class vs. Online Administration of Concept Inventories and Attitudinal Assessments

ID	Author List	Title
UF20	Michael R. Smith, Ricardo A. Aguilar, Vivien Cherrette, Ami Rose, Charlotte Park, Joshua Crane, Emily Bladorn, Harrison Mills, Sisarie Sherry, Courtney Chatha, Heejune Park, Hannah Dailey, Dr. Robin A. Donatello*, Dr. Erik C. Wasinger*	Implementing a Flipped Classroom and Active Learning Techniques in General Chemistry to Augment Student Success at a Mid-sized Rural University
UF21	Tabitha Schempp, Megan Keener, Dr. David Ball	Studies towards the synthesis of duryne and its homologues
UF22	Nicholas Eisemann, Camille Pensabene, Dylan Gouthro, Demond Handley, MyDoris Soto	No Punt Intended
UF23	Chad Dodge, Rachel Teasdale, Jennifer Wenner (University of Wisconsin, Oshkosh)	Groundmass Crystallinities of Proximal and Distal Lavas of the Poison Lake Chain in the Lassen Region of the Southern Cascades
UF24	Cassie Havens, Emily Egusa, Tara Burns, My Lo Thao, Daniel Edwards, Larry Hanne, Larry Kirk	Induction Studies of PHB Depolymerase in Acidovorax and Pseudomonas
UF25	Malory Brown, Emily J. Fleming Nuester	What is a key autotrophic enzyme doing in a metal-oxidizing heterotrophic bacterium?
UF26	Jongwoo Choi, Robin Donatello	A simulation study to compare bias among common Edit and Imputation methods
UF27	Trevor Moore, Cameron Divoky, Aithne Loeblich, Colleen Hatfield, Shahroukh Mistry	Acoustic Analysis of Bat Echolocation Calls: Species Diversity and Seasonal Migratory Patterns
UF28	Sara Lewis, Dr. Christopher J. Nichols	Progress towards the synthesis of guignardianone E
UF29	Vivien L. Cherrette and Dr. Monica C. So	Effects of Solvent Treatment on Morphology of Methylammonium Lead Iodide (MAPbI ₃) Perovskite Thin Films
UF30	Dan Hiney, Kristen Kaczynski	Estimating the Wild Trout Population in the Grass Valley Creek Reservoir
UF31	Cynthia Banales	Trend distribution of annual and seasonal rainfall during 2017 Rain Year and Past Winter Droughts in Chico, California
UF32	Ann Bykerk-Kauffman, Ryan Beane, David Brown, Chad Dodge, James Matthews, Angelica Rodriguez	Geologic mapping in the central Coyote Mountains, California
UF33	Alexandra Smith, Kristen Kaczynski, Michael Rogner	Monitoring native forb restoration at a Sacramento River gravel bar site: Improving methods for the future
UF34	Ricardo Aguilar, Nicholas Eisemann, Aaron Shaffer	Detecting Shots in a Basketball Game from Motion Tracking Data
UF35	Matthew McDonald, Dr. Daniel Edwards, Dr. Carolyn Arpin	Investigation of a Displacement Assay For Drug Design
UF36	Kirstie B. Steiner, Malory O. Brown, Sandra Martell, Betsey Tamietti, 2016 Microbial Genetics Class (BIOL 472), Emily J. Fleming Nuester	Meddling with microbial tubes: sheath production by Leptothrix cholodnii SP-6
UF37	Dawn Clifford, Mayra Diaz, Caitlyn Seymour	HAES Curriculum
UF38	Jimmy Monge, Kristen Kaczynski	Native vs. non-native riparian inputs to California stream communities: a comparative leaf decomposition analysis

ID	Author List	Title
UF39	Alberto Garrido, Rachel Teasdale, Jennifer M. Wenner	Textures and compositions of olivine and plagioclase in primitive basalts of the Poison Lake chain in the Lassen Region of the southern Cascades
UF40	Jonathan Miller	Considering MMNA graphs of connectivity $\kappa=5$
UF41	Sophia E Phillips, Charles G Brooke, Emily J Fleming Nuester	Determining the Relationship Between Biological Iron Oxidation and Mercury Mobility
UF42	Kirk Williams, Tori Goff, Eric Ayars	Quadcopter yaw: conservation of angular momentum or atmospheric drag?
UF43	Joshua Gladfelder, Dr. Carolyn Arpin	Synthesis of GRB2 SH2 Domain Inhibitors: Analogues of Sclerotiorin

Student Class Projects

ID	Author List	Title
S1	Jamie Quinn, Kalyn Finch	Mothers Stroll
S2	Alyssa Mandel, Paul Herrick	Examining the effectiveness of nutrition and physical activity education on adolescents
S3	Keri Fong, Kristen Gularte, Jessica Kassel	Blood Drive in Memory of Kristina Chesterman
S4	Ryan Beane, Jocelyn Bermudez, David Brown, Chad Dodge, Danny Fields, Nichole Hadler-Marsden, Julian Hopper, Evan Mason, James Matthews, Ryan O'Sullivan, Angelica Rodriguez, Matthew Suttles, Sarah Torkelson, Hannah Aird	A field and petrographic interpretation of the emplacement of the Bald Rock Pluton (BRP), northern Sierra Nevada
S5	Anh Ma, Adriana Ayala, Dicha Perez	Dynamic Uno to Dynamic Duos
S6	Josue Solorio, Ashiana Antar	Promoting Health Equity in Migrant Families of Tehama County
S7	Natalie Wren	Disaster Health Services
S8	Miguel Puentes, McKenna Bourland	Wash Your Hands: The Do It Yourself Vaccine!
S9	Nick McConnell, Travis Bybee, Jen Culver, Kevin Carlson	Productive Problem Solving
S10	Joseph Levine, Zach Minneker, Blake Northam, Bryce Channel	Do Study Groups and Social Interactions Affect Student Growth?
S11	Robin Kropholler, Moriah Edwards, Daniel Lomeli, Brittany Munoz, Andrea Partida-Miranda	Addressing Misconceptions in Science: The Role of GE Biology
S12	Drew Fisher, Haylee Vowles, Marissa Indgjer	Girls on the Run
S13	Dr. David Brookes, Jessica Burris, Kelsey Haigh, Miriam Ibarra, Sofia Rodriguez,	Your Locus of Control is Showing
S14	Amber Theresa Adams, Allison Nelson	Building a Bridge- Sexual Assault and the Campus Community
S15	Will Mixter, Jared Sweatmen, Cameron Sorensen, Daniel Wells	Characterization of a High Power Laser Beam
S16	Rodney Worthington, Ricardo Aguilar, Kaitlyn Huntley	Road to Success in Mathematics
S17	Dinesh Khalasi, Elizabeth Freitas, Tanner Talon	Investigation of Retention Improvement through Interactive Learning
S18	Katherine Williams	An Investigation of the Relationship Between Food Cravings and Pre-biotic and Pro-biotic Intake Among College Students
S19	Linda Vue, Catherine Bailey	Torres Shelter Men's Health Promotion
S20	Lilli Consiglio, Nicole Riner	Fairview High School's Young Mothers Program
S21	Taylor Walker, Marissa McCreedy	Nursing Students Walk for Awareness
S22	Courtney Rhodes, Josh McAtee	Protein: The Devil's in the Details
S23	Tristin Brownlee, Ellie Haydock, Susan Reed	Vets Helping Vets
S24	Austin Rossi, Bryce Channel, Faisal Shaikh	Holography

ID	Author List	Title
S25	Austin Pollard, April Nuestro	Waving Goodbye to Our Physics Problems
S26	Stephanie Watson	Examining the Effectiveness of Daily Social Interaction and Activity Among the Elderly
S27	Madalina Ciurea, Silvia Diaz	Healthy Lifestyle
S28	Patrick Hartrum, Haley Howeson, Emilia Spittler	Four Winds After School Program
S29	Justin Casas, Stefani Aston	Speak Your Mind: Silence the Stigma
S30	Jonathan Petersen	Assessing the need for HIV Pre-exposure Prophylaxis (PrEP) education in the Chico Community.
S31	Clair Lowden, Elizabeth Pham, Kyle Phillips, Kelsey Orr, and Steven Sheppard	Fiber laser
S32	Tori Goff, Kyle Riemenschnitter, Jared Sweatman	Ultior Motives: The Dark Energy that Fuels Student Learning
S33	Shannon Watson, Julie Wilson	Every Woman Counts
S34	Tara Rowland, Danielle Marks	Chico State Hungry Wildcat Pantry
S35	Stacie Dempsey	A Look at Tehama County's Knowledge of Sexually Transmitted Infections

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POSTER INFORMATION

Faculty

ID	Author List	Title
F1	Monica C. So	Solving Challenges in Sustainability Using Self-Assembled Nanomaterials
<p>Abstract: Reducing carbon emissions and contaminants in the environment through low cost and efficient means is one of the most pressing sustainability problems facing contemporary society. By exploiting self-assembly of nanomaterials, however, we can spontaneously organize molecular units into ordered structures by non-covalent interactions, which saves cost and time while producing functional nanomaterials. The long-term research goals of the So Lab are therefore two-fold: (i) to study the effects of synthetic changes of molecules on self-assembled materials, and (ii) to study their physico-chemical properties. We are currently investigating the effects of growth conditions of self-assembled materials (e.g. perovskites, metal-organic frameworks, and conductive polymers) on the optoelectronic, morphological, and electrical properties. The resulting work will add insight to the criteria needed to rationally design functional materials for energy conversion, storage, and sensing.</p>		
F2	Ben Van Dusen, Jayson Nissen, Mahendra Thapa, Angelica De La Torre, and Daniel Caravez	The many faces of equity: The system impact of Learning Assistants in physics
<p>Abstract: Creating equitable outcomes among students is a focus of many instructors and researchers. The term equity, however, lacks a single unifying definition within our field. In this investigation we examine three definitions of equity and the systemic impact of Learning Assistants (LAs) on each. To do this, we will leverage the statistical power of the Learning About STEM Student Outcomes (LASSO) platform to create Hierarchical Linear Models that include student concept inventory data, student demographics, and course level data from science classes across the country. Implications for the implementation of LA programs and for researchers investigating equity will be discussed.</p>		

Graduate/Faculty Research

ID	Author List	Title
GF1	Gauri Karnik, Keiko Goto, Shannon Pierson, Joan Giampaoli	Examination of cue-elicited food craving and emotional eating among elementary school children.
<p>Abstract: Objective: To examine cue-elicited food craving and emotional eating among low-income elementary school children. Study Design, Setting and Participants: A cross-sectional study was conducted with 247 third-to-fifth graders primarily consisting of Hispanic and non-Hispanic white students. The study was conducted in the students classrooms where they had access to laptop computers. Outcome Measures and Analysis: Cue-elicited craving for high-calorie, palatable foods was measured using a software program that presented 12 food images. Participants viewed each image separately and used five-point scale to indicate how much they wanted to eat that food. Frequency of eating in emotional situations was also measured. Participants were asked whether they wanted to eat when they experienced certain emotions. Next, foods craved most based on particular type of emotion were identified using 19 culturally appropriate food images. Participants demographic characteristics were also assessed. Pear</p>		
GF2	Allen LaGrange, Kristen Kaczynski	A Comparison Between the Soil Seed Bank and Modern Vegetation in a Wet Meadow, Papoose Meadows, CA
<p>Abstract: Historically, wet meadows have been impacted by anthropogenic uses that have altered the hydrologic regime, transforming vegetation communities. Restoration focuses on restoring hydrologic regimes to create favorable wetland conditions for desirable plant species. Seeds of many wetland species can persist in the seedbank until favorable conditions are met, potentially negating the need for active planting of desirable species in the restoration process. Soil samples were collected at 20 sampling plots along four transects. The top 5cm was collected, hand-sieved, and left to propagate at the Chico State greenhouse for 16 weeks. Specimens were collected, identified and given an indicator status using the United States Army Corps of Engineering: National Wetland Plant List. The percent difference was calculated for seedbank species compared with the United States Forest Service vegetation surveys (2013-2016) to determine the difference between the seed bank and modern vegetation.</p>		
GF3	Silena Barton-Wechsler, David L Stachura, Emily Ho, Lauren Housley	Effects of Zinc Supplementation on Carnitine and Lactate Concentrations in Cultured Liver Cells
<p>Abstract: Zinc is an essential cofactor involved in hundreds of biochemical reactions in the human body and serves many critical roles in human health, including the support of energy metabolism. Zinc deficiency is a major public health concern, leading to over 450,000 deaths annually in children under the age of five. Even marginal deficiencies may result in negative health effects if left untreated. Currently, it is challenging to reliably detect and study the health impact of marginal zinc deficiency, because a sensitive, reliable biomarker of zinc status has not yet been characterized. Metabolomics is an emerging tool that has shown promise in biomarker discovery. Analysis from a randomized, placebo-controlled clinical trial, employing metabolomics analysis, revealed changes in plasma metabolite profiles that identified prospective biomarkers of zinc status. Specifically, our analysis revealed that carnitine ($p = 0.04$) and lactate ($p = 0.02$) concentrations were increased in human plasma foll</p>		
GF4	Brandon Ertis, Carrie Monohan, Allan James, David Brown	Using LIDAR and ArcGIS to describe geomorphometric characteristics of historical hydraulic mining features along the North Fork of the Yuba River to inform ranking and prioritization efforts.
<p>Abstract: The impacts of hydraulic gold-mining practices in the Sierra Nevada mountains that originated over 150 years ago continue to affect water resources in northern California today. In particular, the landscape alteration resulting from and sedimentation induced by historical hydraulic mining, and its continuing impacts, need to be characterized further in order inform remediation efforts. The Yuba River watershed was the most heavily hydraulically mined in the Sierra Nevada mountains in terms of sediment production. This study will utilize a recently developed LIDAR dataset and the geoprocessing tools available through ArcGIS (as well as field visits to verify the accuracy of results) to create an inventory, including geomorphometric characterization and classification, of hydraulic mining features in the North Fork of the Yuba River watershed. Additional objectives of the study include estimating sediment volumes removed from hydraulic mining sites, estimating sediment volumes remaining</p>		
GF5	Sommer Casady, Hannah Aird	Exploration of a High-Sulfidation Epithermal Deposit within the Antelope Valley Volcanic Center, Sierra County California

Abstract: Antelope Valley (AV) is a relatively unexplored, high-sulfidation (HS) epithermal deposit related to southern ancestral Cascade (SAC) arc volcanism. The SAC contain numerous high grade ore deposits that are associated with distinct alteration zones, thus understanding the alteration zones within AV may lead to discovery of a high grade deposit. To this end, the geology, alteration zones and mineralization will be mapped. Preliminary results show that calc-alkaline volcanic rocks exist along the ridge of AV. The central part of the valley has been hydrothermally altered and mineralization (Cu, S) exists within the most altered zone (vuggy silica). The vuggy silica contains fluid inclusions with evidence of immiscible fluids and mineralized vuggs, indicating late stage metal deposition. Characterizing AV will contribute to our knowledge of HS epithermal systems, which will aid in our understanding of epithermal ore forming processes within the SAC arc.

John Kelley, Carrie
 GF6 Monohan, Sandrine Study of the Horse Valley Creek Debris Control Dam
 Matiassek, David Brown

Abstract: Hydraulic mining devastated the landscape of the Sierra Nevada. Upwards of 1.1 billion m of sediment was mobilized between 1853-1884. Mercury was used to amalgamate gold washed out of gravels above stream channels, and much of it is still entrained in river gravels that continue to be washed downstream during storm events. Hydraulic mining sediment persists behind debris control dams (DCD) in the Yuba River watershed (YRW) to this day. This study will characterize the sediment behind the Horse Valley Creek (HVC) DCD and assess the water quality in HVC. The relation between Total Suspended Sediment (TSS) and particulate bound mercury will be established for the YRW using existing data. The water quality results from HVC will be compared to the regional relationship, as a way of determining if it is a priority spot for remediation due to mercury contamination. The results of this study will be used to determine the validity of using TSS as a proxy for mercury contamination in the YRW.

Cindy Wolff, Keiko Goto, Health Partnerships Optimize Community Health
 GF7 Naomi Stamper Needs Assessment Outcomes

Abstract: As stated in the Affordable Care Act, the Internal Revenue Service requires non-profit hospitals to perform a Community Health Needs Assessment (CHNA) every three years to assess, develop and implement strategies to address community health needs. Procedural guidelines for CHNAs have not been established and there is little written literature on the best methodologies for conducting a CHNA. The primary objective of this study was to utilize a mixed-methods approach to better understand the needs of Oroville Hospitals (OH) service area and secondly to strengthen the CHNA through a collaborative effort with local hospitals and the public health department. Quantitative data specific to OHs service area was analyzed to develop a qualitative data collection tool. Researchers conducted two focus groups with OH health care providers and community members to capture various perspectives. Manual thematic analysis revealed three overarching themes: access to health care, health care resources

Spencer J. Carroll, Michael
 GF8 G. Matiassek, Sandrine J. Pollutant Retention Analysis in a Biofiltration System
 Matiassek

Abstract: The urbanization of watersheds disrupts natural storm drainage dynamics and increases the potential for pollutant mobilization and introduction to downstream waterways. Preventing these contaminants from reaching downstream surface waters reduces anthropogenic ecosystem responses prevents the need for costly remediation efforts. Biofilters use a combination of media and vegetation to bioremediate and physically filter out contaminants in urban stormwater runoff. The Biological Wetland Educational Living Laboratory (BWELL) is a biofiltration project at Butte Community College in Oroville, CA that uses a 330 long bioswale to treat 2.1 acres of runoff from the adjacent parking lot. Performance of BWELL was determined, over the course of two storm events, by testing the water quality for nutrients (NH₄, NO₃, PO₄) and common metals associated with urban runoff (Cd, Cr, Cu, Pb, Ni, Zn). Findings can inform the optimization pollutant removal and retention in future biofiltration systems.

Ed Slattery, Troy Cline, Effects of sulforaphane in the tumor microenvironment
 GF9 Lauren Housley of triple-negative breast cancer

Abstract: Triple negative breast cancer (TNBC) is an aggressive form of breast cancer with limited treatment options. Sulforaphane (SFN), a dietary compound, may prevent the progression of TNBC. However, the effect of SFN is not well-understood under the complex, multicellular conditions found in the tumor microenvironment (TME). The objective of this study was to establish the effect of SFN treatment on cell proliferation of human TNBC cells grown under the influence of tumor associated macrophages (TAMs). A conditioned-media approach was used to model non-contact cellular interactions using THP-1 human monocytes and MDA-MB-231 human TNBC cells. TAM-conditioned TNBC cells were treated with SFN (10 M) or vehicle-control. A decrease in cell proliferation was observed in TAM-educated TNBC cells following SFN treatment. The effectiveness of SFN at reducing cell proliferation of TNBC cells under these conditions provides evidence of the potential use of SFN as a component of TNBC treatment.

GF10	Hannah Metzger, David Stachura	Differential Effects of bcl-2 Overexpression in Various B Lymphocyte Populations
<p>Abstract: The purpose of this research is to further characterize the role of Bcl-2, a gene that inhibits cell death (apoptosis), by analyzing its expression and functional outcomes in different populations of B cells. We will use fluorescence-activated cell sorting (FACS) to isolate B cells from distinct populations. From these, we will determine normal levels of BCL-2 expression using a western blot, and the degree of apoptosis using AnnexinV. We will also overexpress bcl-2 in some B cell populations using a vector consisting of bcl-2 driven by the IgM2 promoter and enhancer, and a fluorescent marker (DsRed). We will use FACS on the resulting transgenic line to isolate B cells to determine the levels of BCL-2 and apoptosis. This novel transgenic line could serve as a unique model that can be; a) mated with other transgenic fish to create new models for B cell leukemia or; b) used as a tool for immortalizing B cells to further characterize their development process and transcriptional properties</p>		
GF11	Charles G. Brooke, Emily J. Fleming Nuester	The Effect of Biotic Iron Cycling on Mercury Transformations in an Estuarine Salt Marsh
<p>Abstract: Mercury is a potent biotoxin endemic to California's coast. Iron-rich coastal wetlands act as mercury source following redox transitions. I hypothesized biotic iron cycling increases mercury mobility. I measured mercury and iron concentrations in iron-rich redox oscillating microenvironments where biotic iron-oxidation and reduction occur. Rhizosphere sediment was enriched in iron and had a decreased average mercury concentration compared to bulk sediment. Microbial community and network analyses showed communities in rhizosphere and bulk sediment mirrored oxic and anoxic environments respectively. In iron-rich rhizosphere sediment, iron and mercury concentrations were inversely correlated, supporting mercury mobility driven by biotic iron cycling ($r = -0.80$, $p = 0.02$). Based on the observations from this study, I propose a model predicting the fate of mercury through iron-rich rhizosphere habitats, which leads to its efflux from such wetlands.</p>		
GF12	Arturo Berrun, David Stachura	Ism-1 depletion negatively affects vertebrate hematopoiesis
<p>Abstract: Hematopoiesis is an essential cellular process in which stem cells differentiate into the multitude of different cells that comprise mature blood. Hematopoiesis is a conserved evolutionary process, allowing the use of model organisms such as the zebrafish to investigate blood formation. Our prior bioinformatics data showed highly conserved transcripts within hematopoietic supporting stroma. One highly expressed transcript was ism-1, a secreted protein. To identify the role of ism-1 in hematopoiesis, we performed loss-of-function experiments. Utilizing transgenic zebrafish, we saw that ism-1 depletion in embryos reduced myeloid cells and negatively affected blood circulation. We also enumerated hematopoietic progenitors in vitro, which were reduced in morphant embryos. These results indicate that ism-1 is an important gene in normal vertebrate hematopoiesis, and chemically modulating these transcripts could be utilized to expand blood stem cells to treat a multitude of diseases.</p>		
GF13	Pablo Diaz, Grace Prator, Melissa French, David M. Keller	microRNA-375 has opposing effects on cell proliferation in pancreatic alpha and beta cells
<p>Abstract: MicroRNA-375 (miR-375) is a small non-coding RNA that suppresses insulin secretion in pancreatic islets and is important for development of pancreatic alpha and beta cells. In type 2 diabetes miR-375 overexpression is correlated with an increase in alpha cells and a reduction in beta cells. Based on this, we hypothesize that miR-375 will have a positive role in alpha cell proliferation. Here we perform cell proliferation assays coupled with inhibition of miR-375. Cell proliferation is decreased by 20% in mouse alpha TC1 cells when transfected with a miR-375 inhibitor. We show mixed results in mouse Min6 beta cells, where an MTS cell proliferation assay shows an approximate 20% increase when miR-375 is inhibited, but no change when a cell counting assay is performed. Therefore, our data supports a model in which miR-375 stimulates alpha cell proliferation. We are unsure how miR-375 does this, but preliminary evidence suggests that it inhibits the growth repressor Rasd1. This work has im</p>		
GF14	Lauren Krohn, Joan Giampaoli, Keiko Goto, Matthew Stone, Jennifer Dye	Local Procurement in School Foodservice

Abstract: The objective of this study was to investigate the factors that motivate School Foodservice Directors (SFSDs) to purchase produce from vendors that source locally. SFSDs were recruited through the California School Nutrition Association and surveyed to reveal any motivators to purchasing from vendors who source locally. The survey included demographic and a series of open-ended questions and was distributed to 283 California School Foodservice Directors. A total of 20 surveys were returned and descriptive statistics and Grounded Theory were utilized to analyze data. Primary themes extracted from the survey included: better for the environment, supporting the local economy, aligning with the community's wishes, using local as a marketing tool, nutrition education opportunities, and supporting a positive image of school meals. Cost, availability, consistency, food safety standards and the allowance of their bidding process were primary road blocks to purchasing locally. Further research

GF15 Sean Lucas, Jay Smart Using Modified False-Color Imagery to Emphasize
Geologic Features in the Coyote Mountains, Imperial
County, California (Research Update)

Abstract: The Coyote Mountain range in southern California has a structurally complex geologic history. Currently active right-lateral shear dominates the range, as expressed by the range-bounding Elsinore and Painted Gorge fault zones and a complex networks of minor faults between the two. The Elsinore fault is well-studied and delineated, but the Painted Gorge fault is less well documented. Delineating it and nearby minor faults is challenging because they cut across uniformly colored and textured, poorly consolidated, fine-grained sediments that form badlands. The use of true color aerial imagery is similarly problematic. However, by using modern image-editing software to enhance subtle differences in the color and texture of the images, certain geologic features are resolved, making it possible to accurately map the Painted Gorge fault and other nearby faults. This method can be equally effective when applied across a number of other environments.

GF16 Donald Beck, Keerthana Highly Pathogenic H5N1 Influenza Virus Restricts
Sekar, Stacey IFN-Gamma Responses in Macrophages in a
Schultz-Cherry, Troy Cline Replication-Dependent Manner

Abstract: Highly pathogenic avian influenza (HPAI) viruses continue to cause human infections with a reported mortality rate of 50%. However, the mechanism of enhanced disease severity is not fully understood. Through the production of antiviral cytokines and phagocytosis of dead/infected cells, macrophages play a critical role in protection against influenza virus infection. On the other hand, macrophages have been implicated in exacerbated disease following H5N1 infection via a dysregulation of macrophage antiviral responses. H5N1 influenza viruses are unique in their ability to replicate in some macrophage models, a feature that maps to the viral hemagglutinin (HA) gene. We hypothesize that H5N1 influenza viruses alter critical macrophage functions in a replication-dependent manner. We investigated the impact of influenza virus replication on macrophage phagocytosis by infecting RAW264.7 macrophages with live/UV-inactivated H1N1 influenza virus A/California/04/2009 (CA/09; unable to replicate

GF17 Shannon Pierson, Shelly Development and evaluation of the mindful eating
Hart, Keiko Goto, Joan questionnaire for children
Giampaoli

Abstract: Mindful eating refers to a nonjudgmental awareness of physical and emotional sensations associated with eating behaviors. There is limited information regarding mindful eating among children. The current study was conducted to develop and evaluate a mindful eating questionnaire for children (MEQ-C). Seventeen items were developed based on the existing mindful eating questionnaire for adults. A cross-sectional survey was conducted with 263 children. Participants were third through fifth grade students from two low-income elementary schools in rural northern California. They were primarily non-Hispanic white and Hispanic students. Exploratory factor analysis was used to identify factors, which were defined as the mean of items ranging from one to four, where four indicated higher mindful eating practices. Pearson's correlation was used to measure associations of food craving, emotional eating, food consumption and the frequency of eating a snack or meal in front of a screen with MEQ-

GF18 Shannon Pierson, Keiko Impact of a pilot mindful eating intervention on
Goto, Joan Giampaoli, food-related behaviors among elementary school
Alyson Wylie students and parents

Abstract: This quasi-experimental study examines the impact of a pilot mindful eating intervention on food behaviors among children. Participants were third through fifth grade students and their parents from two low-income, ethnically diverse elementary schools in rural northern California. The intervention included two parent workshops, six monthly in-class mindful eating lessons and activities, and mindful eating activities to complete at home. Main outcome measures were mindful eating, cue-elicited food craving, and food consumption among children. Parent surveys assessed changes in the home food environment. Paired t-tests compared pre-to-post changes within groups. Independent t-tests compared differences in pre-to-post change between groups. Intervention students reported increased awareness and decreased craving response. Children helped prepare family meals more often and fruit consumption significantly increased. The availability of salty snacks in the home decreased. Continued research

GF19

Ryan Stolenberg

Water Electrolysis System Optimization in a Microgrid

Abstract: Increases in distributed renewable generation (mostly wind and solar) have complicated normal electrical grid operations. Careful engineering can effectively eliminate the potentially adverse impacts that distributed resource penetration could impress on the electric delivery system. When renewable generation technologies are paired with well-scaled, high efficiency, energy storage systems, they have the potential to meet a much more consistent level of demand. Hydrogen is an extremely energy dense molecule but does not occur in the desired H₂ gaseous form under natural, atmospheric conditions. An electrolyzer is a piece of equipment designed to break the bonds of water (H₂O) using electricity. This system required the design of a comprehensive sensor scheme capable of recording and logging the inputs and outputs of the system. Measuring the component's electrical consumption and fuel production allows for real time and historical monitoring to quantify the system's efficiency variabil

Undergraduate/Faculty Research

ID	Author List	Title
UF1	Dennis A. Hopelian, Sandrine J. Matiassek	Quantification of Hydrocarbons from Aqueous Samples by Gas Chromatography
<p>Abstract: An unfortunate consequence of urbanization is the introduction of pollution in storm runoff. Petroleum products are ubiquitous in Chico and come from sources, such as vehicles, parking lots, and highways. This research project focuses on the development of an analytical method for the detection of hydrocarbons in urban stormwater. Detectable and quantifiable analytes include diesel range hydrocarbons with chain lengths from C10-C28, polycyclic aromatic hydrocarbons and non-halogenated organic compounds. The analysis begins with a liquid-liquid extraction using dichloromethane followed by separation and quantification by gas chromatography. Developing this in-house analytical method will provide future researchers with a detection method for hydrocarbons while alleviating the prohibitive costs of outsourcing laboratory tests.</p>		
UF2	Tanya Schmidt, Matt Boice, Omar Pulido, David Stachura	kal1b Reduction Decreases Vertebrate Blood Cells
<p>Abstract: Hematopoiesis is the process of blood development and formation of all blood cell types from hematopoietic stem cells (HSC). Zebrafish are an excellent model organism to study vertebrate hematopoiesis because they have a similar hematopoietic system to mammals containing highly conserved genetic processes for hematopoietic development and function. Prior studies have shown 447 gene transcripts are shared among hematopoietic supportive cells and of those 100 are overexpressed. kal1b was among those overexpressed transcripts indicating it's implicated in hematopoiesis. Preliminary results indicate that kal1b transcript reduction in zebrafish significantly decreased platelet formation.</p>		
UF3	Charles Payne, Daniel Wheeler, John Robertson	Measuring Femtosecond Molecular Dynamics
<p>Abstract: We have started assembling a pump probe experiment to analyze ultrafast molecular dynamics. When certain molecules absorb a photon they move into an excited state and then relax back into a ground state, which happens on the order of femtoseconds (10^{-15}seconds) to nanoseconds (10^{-9}seconds). To observe these dynamics, short pulses of light are needed to be supplied from a non-linear gain medium. This experiment will consist of exciting single molecules with a pump pulse and then delaying a probe pulse to observe the difference in intensities of different frequencies of light transmitted through the sample. The first milestone is to read intensity data from the spectrometer, to record the probe signals. We are in the process of writing a program to capture spectral data from the spectrometer in LabView. After spectral data can be successfully gathered we plan to efficiently attenuate any noise produced in the system by using a mechanical chopper to then average out unwanted signals.</p>		
UF4	Alyssa Bowlsby, Joshua Gladfelder, Dr. Carolyn Arpin	Synthesis of a known binder of the GRB2 SH2 domain from naphthaldehyde
<p>Abstract: GRB2 (Human Growth Factor Receptor Bound Protein 2) is an adaptor protein whose overexpression has been linked to CML (chronic myeloid leukemia). Importantly, GRB2 binds its partners through its SH2 (Src Homology 2) domain and acts as a homodimer. Thus, to enhance GRB2 inhibition, we set out to link two known monomeric binders of the GRB2 SH2 domain to yield novel dimeric antagonists. These synthesized dimeric antagonists are designed to mimic endogenous phosphotyrosine binding residues and simultaneously bind dual GRB2 SH2 domains, thus blocking the activity of the GRB2 homodimer. This method of GRB2 inhibition has not yet been studied despite the significant potential for increased binding affinity of the antagonists and subsequent enhanced biological activity. The motivation, design, and novel synthesis of our dimeric antagonists will be presented, along with a preliminary evaluation of biological activity.</p>		
UF5	Elizabeth M. Pham, Gordon V. Wolfe	Determining the Surface Free Energy of Marine Alga Emiliania huxleyi with Spectrophotometry
<p>Abstract: Marine alga <i>Emiliania huxleyi</i> (Ehux) is the most abundant coccolithophore in the world and a promising source for sustainable biofuel. In our CSU, Chico lab we are interested in the surface free energy (SFE) of Ehux cells, especially as the cells lipid content and locations change with age. The surface free energy of a cell contributes to its aggregation and adhesion properties which can also provide answers to biofouling issues. We administered a newly-developed spectrophotometric assay to try to determine the SFE of Ehux. Although the procedure cannot yet be replicated with polystyrene microspheres, we have reason to believe that adding a fluorescence reading to the procedure provides more accurate and sensitive data when determining the SFE of algal cells.</p>		

UF6	Nancy De Witt, Ceara Purcell, Hannah Aird	Au and Ag Analysis of the Ann Mason Area, Yerington Nevada
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Abstract: The Ann Mason Area, Yerington, Nevada, has been studied and mined for copper ore minerals since the 1970s. In 2002, Entre Gold picked up the site to continue mining exploration using new and existing drill cores. Assay data show the presence of gold (Au) and silver (Ag), but their mineral hosts are unknown. Our goal is to determine the assemblages hosting the precious metals. To determine the distribution of economic minerals, we collected thirty samples from drill core and investigated the lithological, petrological, and geochemical trends using hand sample, thin section, and SEM analysis. In the chalcopyrite-bornite zone we found trace amounts of AgAu, AgAuTe, AuPbSe, AgPbTe, AgTe, AuTe, Pb, PbSe, and PbTe. These economic minerals are associated with bornite, chalcopyrite, alkali feldspar, plagioclase, monazite, enargite, quartz, and biotite. While the slides show lithologic consistency, further sampling, petrology, and SEM analysis is needed for a more complete picture.

UF7	Dylan Anderson, Gabrielle Cahill, Courtney Copper, Chad Faulk, Noah Sammuli, Michael Matiassek	BWELL - Biofiltration Wetland Educational and Living Laboratory
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Abstract: The Biofiltration Wetland Educational and Living Laboratory (BWELL) is a 330 foot long swale that is designed to filter parking lot stormwater runoff at Butte College. Biofiltration is a natural process where plants, fungi, bacteria and other microbial life capture and breakdown contaminants in stormwater runoff. Typical urban runoff constituents usually include plant material, fertilizers, automotive chemicals, oils, debris, and animal waste. Throughout the course of this project we have conducted repeated water quality tests to determine the effectiveness of our biofiltration system. Biological Oxygen Demand (BOD), Dissolved Organic Compounds (DOC), oil and grease, turbidity, conductivity, and pH have shown a general improvement in water quality. Plant surveys indicated an increase in coverage of wetland plants and perennial bunch grasses as well as a reduction in exotic annuals in the bioswale.

UF8	Chelsea L. Meddings	Efficacy of California Native Drought-tolerant Plants at Heavy Metal Removal from Urban Stormwater in Biofiltration Systems
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Abstract: A strategy to mitigate heavy metal contamination in urban stormwater is the use of biofiltration systems. Composed of soil media, plants, and microbes, these systems remove heavy metals from stormwater through sorption, uptake, and degradation processes. Five CA native, drought-tolerant plants and a control were tested for heavy metal removal in triplicate biofilter columns in a laboratory using synthetic stormwater. Biofilters were built out of PVC pipe and filled with layers of pebbles, mulch, soil and sand, and planted with sedge, deer grass, rush, blue sage or California rose. Concentrations of heavy metals (Cd, Cu, Pb, Ni, and Zn) were measured in synthetic stormwater before and after biofiltration. Heavy metal content in plant shoots and roots was analyzed before and after three stormwater applications. Knowing which plant is most effective at heavy metal removal, and whether metals accumulate in roots or shoots, informs design and long-term maintenance of biofiltration systems.

UF9	Stephanie Aguiar, Sofia Rodriguez, Tina Hanson, David Stachura	Analysis of novel inhibitors of the GRB2 SH2 domain that decrease proliferation in chronic myeloid leukemia
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Abstract: Chronic myeloid leukemia (CML) is a disease affecting the normal growth of myeloid cells in the blood and bone marrow caused by a chromosomal translocation linking the BCR and ABL1 genes together. Once transcribed, this fusion protein known as BCR-ABL, causes an over-proliferation of myeloid cells. Downstream of BCR-ABL is GRB2, an intracellular protein involved in cellular growth and differentiation. BCR-ABL binds to the SH2 domain of GRB2 and causes leukemic transformation. K562 cells are human BCR-ABL+ immortalized myelogenous leukemia cells; we tested novel SH2 antagonists (NHD215A, NHD215B, NHD292, and NHD2107) against them via a metabolic assay and found significant growth reduction after 48hrs (IC₅₀ = 62.5uM, 31.25uM, 125uM, and 62.5uM respectively). Each antagonist was then tested on developing zebrafish embryos, which indicated that future studies on the effectiveness of these SH2 antagonists can be conducted in vivo, bringing us closer to determining safe treatments for CML.

UF10	Elizabeth Bianchini, Analucia Barragan Trejo, Raymond Bogiatto, Robin Donatello, Magdalena Plancarte, Walter Boyce, Troy Cline	Isolation and characterization of avian influenza viruses in Northern California
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Abstract: Recent human infections with influenza viruses of avian origin highlight the need for continued surveillance of avian influenza viruses in waterfowl with the goal of detecting virus strains that are adapted for infection of mammals. In 2014, highly pathogenic avian influenza (HPAI) H5N8 first detected in South Korea entered North America through the Pacific Flyway, a major migratory route for waterfowl and caused outbreaks in poultry in the United States. California's Sacramento Valley provides wintering habitat for 44% of the birds that use the flyway. As such, the Sacramento Valley serves as an important site from which avian influenza viruses may be isolated. We collected cloacal swabs from 1,172 hunter-killed ducks across three hunting seasons at different locations in the Sacramento Valley. Seventeen species were represented with a slight male sex bias. The presence of influenza viruses in cloacal swabs was determined by PCR for the matrix gene. PCR positive swabs were inoculated

UF11	Connor J. Hutcherson, Dr. Monica C. So	Temperature dependence of solution processed Perovskite solar cells
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Abstract: One primary reason for the rapid increase in efficiency of perovskite-based photovoltaic technology is their modular composition and modular fabrication methods. In this study, we utilize a two-step dipping method for the fabrication of a type of perovskite called formamidinium lead iodide (FAPbI₃), which is formed from precursor lead iodide (PbI₂) and formamidinium iodide (FAI). We study (a) how the FAI precursor temperature affects the resulting morphological features of the thin film and (b) how much of the precursor materials converted to FAPbI₃. We found that as temperature of the dipping solution was increased, there was a greater precursor conversion, as seen by SEM, XRD, and UV-Vis. Also, as the temperature of the precursor solution increased, film thickness and absorbance also increased. Future work will involve attaining electrical data to gain an understanding of the optoelectronic properties of the solar cells.

UF12	Kyle Rocha-Brownell, Pierre Drian, David Richter, Peter Sullivan, Shane Mayor	Evaluation of a Wavelet-Based Optical Flow Algorithm through the Use of Large Eddy Simulation
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Abstract: Recent progress in the ability to observe two-component wind fields in the atmospheric surface layer by horizontally scanning aerosol lidar and motion estimation algorithms elevates interest in issues such as accuracy, precision, and resolution. Toward this, we have started using large eddy simulations (LES) to advect and disperse a passive tracer in the model domain that mimics atmospheric aerosol concentration. A wavelet-based optical flow algorithm, named Typhoon, was applied to horizontal fields of the passive tracer near the surface of the model domain and dense motion vectors were derived for all grid points on those slices. Each motion vector can be compared with the wind velocity at the corresponding grid point. Moreover, large eddy simulations can be conducted for a wide variety of boundary layer states and environments, thereby allowing us to infer how the motion estimation may perform in various situations.

UF13	Matt Lemon, Amber Williams, Joshua Crane, Annie Valenschini, Dr. Lisa Ott, Dr. Janine Stone, Dr. Jude Bayham	DES Solvents from Biodiesel from Biodiesel Waste
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Abstract: Biodiesel production has remained a steady source of renewable fuels for at least a decade. As such, its production has remained high (around 2 billion gallons annual in the US and in the EU) for the last several years. Consequently, the co-generation of biodiesels glycerol byproduct has kept pace. This means that approximately 200 million gallons of this low-value, low-demand byproduct enters the market annually. Recently, our group contributed the seminal publication showing that this glycerol byproduct can be converted into a novel class of solvents called deep eutectic solvents (DESs). Recently, we have extended this work to produce a series of DESs and we are characterizing them through density and viscosity measurements. These novel solvents have the potential for broad impact as reusable, biodegradable, low-volatility reaction solvents. We have completed an analysis of the economic feasibility of this approach using Chico as an exemplar community.

UF14	Jeremy L. Barnett, Nicole D. Mackie, Dr. Monica C. So	The Effects of Water on Perovskite Solar Cells
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Abstract: Perovskite ($\text{CH}_3\text{NH}_3\text{PbI}_3$) solar cells have demonstrated great promise in the development of photovoltaic materials. Their organic-inorganic framework has proved to illustrate high current efficiencies up to 20%. This study highlights how the moisture affects stability of the perovskite on the solar cell. The perovskite layer was deposited using a one-step method and a 1:1 ratio of PbI_2 and MAI. A spincoating deposition technique was used to deposit uniform layers and ensure even coverage. As concentration of the water content was increased in the precursor solution from 0-5%, we did not observe any changes by SEM, solid state UV-Vis absorption, and XRD. However, when the perovskite solar cells were placed in a humidity chamber, we did observe noticeable difference in the morphology, crystallinity, and absorbance spectra. Future work will involve increasing water concentrations in the precursor solution and exploring how water affects other layers.

	Richard C. Vitamanti,	Media Effects on Nutrient Removal by Biofiltration
UF15	Sandrine J. Matiassek	Systems

Abstract: Biofiltration is a low impact design that can be used to intercept contaminants found in urban stormwater before they enter a waterway, which is useful for improving water quality. Nutrients are the focus of this study as they are commonly associated with urban-influenced water and have a profound effect on downstream aquatic ecosystems by promoting eutrophication. This research investigates how to reduce nutrient loads of stormwater runoff by examining four different types of media additives (zeolite, compost, activated carbon, and rice hull biochar) in column tests. Synthetic stormwater modeled after stormwater samples collected in Chico, CA was added to triplicate biofilter columns in three storm events. The resulting water was analyzed for nutrients (ammonium, nitrate, and phosphate) to determine if they were quantitatively removed from stormwater. The results of this study should help to determine which of the four media could best enhance a biofilters efficiency.

	William Mixter, Jason	
	Mickel, Michael Doris,	
	Joseph Levine, Logan	
	Storm, Carissa Leville,	
UF16	Austin Pollard, Nathan	The Coolest Matter in the Universe: A Pathway to
	Fullmer, Dr. Joseph	Ultracold Atoms and Bose-Einstein Condensates
	Pechkis, Dr. Anna	
	Petrova-Mayor, and Dr.	
	Hyewon. K. Pechkis	

Abstract: As the workhorse for modern atomic, molecular, and optical (AMO) physics for the past 30 years, ultracold (microkelvin temperature) gases have proven to be extremely robust systems for studying a broad range of physical phenomena such as plasmas, cold chemical reactions, and condensed matter systems. Applications include quantum information and computation, rotational and gravitational sensors, and precision measurements to name a few. We will discuss independent study research being performed in PHYS 499 to construct an ultracold atom laboratory. In particular, we will discuss the fundamentals of laser cooling and trapping, the custom laser diode systems being constructed to cool atomic rubidium, and the construction of the ultra-high vacuum chamber where experiments will be performed. We will also discuss future experiments involving these ultracold systems.

	Charlotte Park, Jacob	
UF17	Kalbfleisch, Joshua	Synthesis of a degradation product of a herbicide,
	Gladfelder, Dr. David Ball	Benzobicyclon

Abstract: The herbicide benzobicyclon can be utilized in rice fields in California by inhibiting the activity of 4-hydroxyphenolpyruvate dehydrogenase causing plant bleaching followed by necrosis and plant death. For EPA studies and analysis, the degradation products have been synthesized for analysis at the UC Davis Department of Environmental Toxicology by the Tjeerdema research group. The synthetic scheme and results for synthesis of the known degradation product, 3-(3-(2-chloro-4-(methylsulfonyl)phenyl)-3-oxopropanoyl)cyclopentane-1-carboxylic acid, will be presented.

	Angelica Rodriguez, Chris	Monitoring hydrothermal water temperature and
UF18	Allen, Rachel Teasdale	composition at the Lassen Volcanic Center (LVC),
		Southern Cascades

Abstract: This work reports on water temperature measurements for the hydrothermal system of the LVC based on the idea that as magmatic activity changes, the temperature of the hydrothermal system will also vary. Water temperature measured at Sulphur Works (SW) correlates with diurnal variations (Mendes et al., 2008). Baseline winter water temperature for SW is 90C. Water composition at SW since 2008 includes, pH of 2.11-2.17 and isotope values of $d18O/16O = -4.29$ and $dD -62.4$ in the fall but $d18O/16O = -0.29$ and $dD = -11.2$ in spring (Mendes et al., 2008). These data indicate meteoric water is an important component for the SW hydrothermal system, and that spring run-off overprints hydrothermal fluid temperature and water composition. Ongoing work includes collecting water temperature and composition data at SW to characterize trends from pre-drought years (2008-2012), through drought years (2012-winter 2016) and a more recent high precipitation and snow pack year (winter-spring 2017).

	Xochith Herrera, Manher Jariwala, Jayson Nissen, UF19 Eleanor Close, Ben Van Dusen	Participation Rates of In-class vs. Online Administration of Concept Inventories and Attitudinal Assessments
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Abstract: We investigated differences in student participation rates between in-class and online administrations of the Force Concept Inventory (FCI), Conceptual Survey of Electricity and Magnetism (CSEM), and the Colorado Learning Attitudes about Science Survey (CLASS). 1,645 students from 3 introductory physics courses over two semester were instructed to complete the CLASS and the concept inventory relevant to their course, either the FCI or CSEM. We randomly assigned each student to take one of the instruments in class and the other instrument online using the LA Supported Student Outcomes (LASSO) platform at the beginning and end of the course. Results indicated large variation in participation rates across both test conditions (online vs. in class). We will discuss the implications for measuring changes in students knowledge and attitudes using the two different methods for administering the research instruments.

	Michael R. Smith, Ricardo A. Aguilar, Vivien Cherrette, Ami Rose, Charlotte Park, Joshua Crane, Emily Bladorn, UF20 Harrison Mills, Sisarie Sherry, Courtney Chatha, Heejune Park, Hannah Dailey, Dr. Robin A. Donatello*, Dr. Erik C. Wasinger*	Implementing a Flipped Classroom and Active Learning Techniques in General Chemistry to Augment Student Success at a Mid-sized Rural University
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Abstract: Incorporation of a flipped classroom and active learning techniques has been shown to improve student success in undergraduate chemistry courses. On the basis of low student success rates, we have entirely reimaged our general chemistry classroom with the Course Redesign with Technology (CRT) Program through the California State University Chancellors Office: Content delivery is achieved using locally produced videos. Class time incorporates more active learning techniques. UMKC Supplemental Instruction (SI) has been implemented.

	Tabitha Schempp, Megan UF21 Keener, Dr. David Ball	Studies towards the synthesis of duryne and its homologues
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Abstract: (-)-Duryne and its homologues were isolated from the marine sponge *Petrosia ficiformis* and reported to exhibit potent cytotoxic activity. The six linear acetylenes, including (-) and (+) duryne enantiomers, were screened against HeLa cells in an MTT assay, which exhibited inhibition of tumor cell growth. The symmetric enantiomers of duryne have previously been synthesized, but no synthetic route to the asymmetric homologues is currently available. The motivation is to design a new route for the symmetric enantiomers that will accommodate asymmetric synthesis. This pathway will yield the asymmetric compounds upon application. New explored routes with a shorter carbon backbone model compound will be presented.

	Nicholas Eisemann, Camille Pensabene, Dylan Gouthro, UF22 Demond Handley, MyDoris Soto	No Punt Intended
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Abstract: The traditional strategies that are used during the fourth down in a football game may not be the optimal strategy for winning the game. While going for it on fourth down is not the preferred method for football coaches, they may want to reconsider changing their strategies to maximize their points. For this research, we analyzed all thirty-two teams in the NFL league and observed their offensive strategies. We then ran simulations for different types of plays to find the optimal strategy for each team.

Chad Dodge, Rachel Teasdale, Jennifer Wenner UF23 (University of Wisconsin, Oshkosh)	Groundmass Crystallinities of Proximal and Distal Lavas of the Poison Lake Chain in the Lassen Region of the Southern Cascades
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Abstract: The Poison Lake Chain (PLC) is a group of 39 basaltic cinder cone volcanoes (100 +/-10 ka) east of Lassen Peak. Calculated effusion rates for 28 PLC flows range from 0.6-40 m³/s, and eruption durations from 20-205 hours. This shows eruptions of PLC lavas were comparable to the 1999 eruption of Bocca Nuova on Mt. Etna (Harris, 2007). Cooling rates determined from groundmass crystallinities and analog cooling experiments constrain PLC lava flow cooling and emplacement rates. Lavas were erupted at approximately 1150-1200 °C. SEM backscatter electron (BSE) images of crystallinities from paired samples with the same vent and distal parts of the flow help constrain cooling during flow emplacement. Vent samples have smaller groundmass crystal sizes (10um-381um²) and distal samples have larger crystal sizes (18um -1100um²). Groundmass crystallinities will quantify the range of cooling and crystal growth during emplacement.

Cassie Havens, Emily Egusa, Tara Burns, My Lo UF24 Thao, Daniel Edwards, Larry Hanne, Larry Kirk	Induction Studies of PHB Depolymerase in Acidovorax and Pseudomonas
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Abstract: Biodegradable plastics are critical for a sustainable future. Polyhydroxybutyrate (PHB), polylactic acid (PLA), and co-polymers with valerate are examples of bioplastics that are partially degraded by excreted microbial enzymes in the environment. Bacteria capable of degrading PHB were previously isolated by our lab. Two of the isolates, *Acidovorax wautersii* and *Pseudomonas alcaliphila*, showed inducible production of a depolymerase in the presence of PHB. The monomer of PHB, 3-hydroxybutyrate (3HB), demonstrated partial induction of the depolymerase in *Pseudomonas*. Induction of the PHB depolymerase in *Pseudomonas* was partially repressed by the presence of glucose. A surfactant, Tween 20, was found to inhibit induction and activity of the depolymerase in *Acidovorax*. Both strains produce a protease that may degrade the depolymerase (at later stages of induction). Future work will focus on other strains and testing oligomeric esters of 3HB as inducing agents.

Malory Brown, Emily J. Fleming UF25 Nuester	What is a key autotrophic enzyme doing in a metal-oxidizing heterotrophic bacterium?
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Abstract: The metal-oxidizing bacterium *Leptothrix cholodnii* is considered an obligate heterotroph, but its genome contains ribulose-1,5-bisphosphate carboxylase/oxygenase (RuBisCO), the key enzyme for autotrophic carbon assimilation. Some phototrophic bacteria use RuBisCO to mix organic and inorganic carbon assimilation to maintain redox balance in reducing conditions, but little is known about RuBisCO activity in chemomixotrophic bacteria. *L. cholodnii* increases its cell yield in the presence of metals, elevated CO₂ concentration, and microoxic conditions. However, an enzyme assay showed RuBisCO was inactive after 20 and 40 hours in cultures supplied with reduced manganese (Mn²⁺) and gassed with 7% CO₂ and 10% O₂. RuBisCO was also inactive in cultures grown aerobically with and without Mn²⁺. Future work will continue to examine the relationship between oxygen, carbon dioxide, RuBisCO activity, and metal oxidation using targeted gene mutation analysis.

Jongwoo Choi, Robin Donatello UF26	A simulation study to compare bias among common Edit and Imputation methods
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Abstract: Missing and faulty data are ubiquitous in data analysis. Ignoring the problem can result in heavily biased results. Imputing missing data or editing faulty data using a deterministic method artificially decreases the variance of parameter estimates. We created true data without error using a known model. Then we created missing and faulty data to get a simulated observed data set. Missing data were created completely at random, at random, and not at random. Two types of faulty data were created: a logical error where a combination of values between two variables cannot exist, and a balance error where the sum of two variables should equal the value of a third but do not. We applied several common methods to correct for faulty and missing data, calculated absolute and relative bias on each corrected data set, and compared results across methods. Using a multiple imputation technique with constraints so imputed values pass both edit rules generated results with the smallest amount of

Trevor Moore, Cameron Divoky, Aithne Loeblich, UF27 Colleen Hatfield, Shahroukh Mistry	Acoustic Analysis of Bat Echolocation Calls: Species Diversity and Seasonal Migratory Patterns
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Abstract: California is home to 23 species of bats - almost half of all species in the country - yet few long-term acoustic monitoring programs exist. This study examines the diversity and activity patterns in three habitat types in northern California. Acoustic monitoring equipment recorded echolocation calls of bats and were analyzed using SonoBat software. Fourteen species were found across all habitats with seven being ubiquitous. The canyon bat and the fringed myotis were unique to canyon habitat while the long-legged myotis was only found at ELFS. The Yuma myotis was the most abundant ubiquitous species. BCCER had an early Spring peak. ELFS had substantial activity during the late summer and CSUF peaked during late Fall. Bats showed significant seasonal shifts in activity levels but remained present at the two lower elevation sites throughout the year. Interesting seasonal variation suggests possible changes in prey availability in combination with shifting seasonal conditions.

Sara Lewis, Dr.
UF28 Christopher J. Nichols Progress towards the synthesis of guignardianone E

Abstract: Guignardianone E is one of a number of secondary metabolites of the fungus *Guignardia bidwellii*. A 5-step synthesis of guignardianone E from valine is being developed. The key synthetic steps include a copper(I) mediated oxidation of an amino ester to an α -ketoester and formation of an acetal from this α -ketoester and phenyllactic acid with $\text{BF}_3 \cdot \text{U} + 25\text{CF}_3\text{Et}_2\text{O}$

Vivien L. Cherrette and Dr.
UF29 Monica C. So Effects of Solvent Treatment on Morphology of Methylammonium Lead Iodide (MAPbI_3) Perovskite Thin Films

Abstract: Perovskite ($\text{CH}_3\text{NH}_3\text{PbI}_3$)-based solar cells have experienced a dramatic increase in efficiency in the last 5 years. The morphological features of the $\text{CH}_3\text{NH}_3\text{PbI}_3$ film, such as uniformity, crystal growth, and pinholes, have a direct effect on their efficiencies. In this study, we demonstrate that anti-solvents promote layer uniformity, increase primary nucleation, and reduce pinholes. Anti-solvents are defined as solvents in which the precursor solution is less soluble. We investigate how the film morphology changes when the perovskite films are pre-treated with chlorinated benzene solvents, such as benzene, toluene, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,2,4-trichlorobenzene. The films were characterized using UV-Vis absorption, XRD, and SEM. We find that solvent treatment improves the absorbance, yields cubic and crystalline structures, and uniform, flat film morphologies. Future work will involve exploring solvents that act as a Lewis base but retains quality

Dan Hiney, Kristen
UF30 Kaczynski Estimating the Wild Trout Population in the Grass Valley Creek Reservoir

Abstract: A continuous census mark and recapture population survey was used to estimate the wild Rainbow Trout in the Grass Valley Creek Reservoir (GVCR). The population was sampled by hook and line (flyfishing only), fish were measured to the nearest 1/4 inch, and the physical health of each fish was assessed based on the number of physical defects present. The Schnabel method of estimating a fish population was used to calculate the abundance of Rainbow Trout in the GVCR. The calculated estimate of abundance was 1,924 fish, the average size of the sampled population was 255mm, and 95% of the population was rated as a number 1 for health, meaning they exhibited zero physical defects. This is the first study of this type at the GVCR and future studies should be conducted to monitor the population over time.

Cynthia Banales
UF31 Trend distribution of annual and seasonal rainfall during 2017 Rain Year and Past Winter Droughts in Chico, California

Abstract: For more than a century, California has been a state where people flocked too. Unfortunately during 2012 to 2014, California was punished with the most unforgiving winter drought in its last century, up until 2017. Precipitation totals were measured in Chico, California during the 2016 water year and compared to the past winter droughts. A stunning transformation caused by an unrelenting series of storms in Chico, Ca had its average annual rainfall at 26.61 inches. Measuring precipitation is of importance because the amount and duration of precipitation events affect both water levels and water quality.

Ann Bykerk-Kauffman,
Ryan Beane, David Brown,
UF32 Chad Dodge, James Geologic mapping in the central Coyote Mountains, California
Matthews, Angelica
Rodriguez

Abstract: The Coyote Mountain Range of southern California lies at the interface of the Peninsular Range and Colorado Desert geomorphic provinces, just north of the Mexican border, between two strands of the NW-trending San Andreas right-lateral transform plate boundary. The Elsinore fault bounds the range to the SW and the Painted Gorge fault bounds it to the NE. The crust between these two faults is folded into a major SE-plunging anticline and cut by many NW-striking right-lateral strike-slip faults, NE-striking left-lateral strike-slip faults, and N-striking normal faults. This complex network of structures slices across an equally complex stratigraphic framework of Neogene sediments deposited on Paleozoic and Mesozoic metamorphic rocks along a profound buttress unconformity. New geologic mapping in a remote part of the central Coyote Mountains reveals previously unknown faults and documents the attitudes of bedding in an area that has been largely unexplored by prior workers.

Alexandra Smith, Kristen Monitoring native forb restoration at a Sacramento
UF33 Kaczynski, Michael Rogner River gravel bar site: Improving methods for the future

Abstract: Gravel bars are common features along rivers and under historic hydrologic conditions would be colonized by *Salix* spp. and *Populus* sp. In the absence of natural flooding regimes, these xeric locations are better suited for restoration of a plant community dominated by upland native forbs. In early 2013, River Partners initiated restoration of a gravel bar site through seeding of eight upland forb species. River Partners sampled the site in Fall 2013 and we revisited in Fall 2016. The goal of our study was to investigate the success of eight planted forb species by comparing density and dispersal changes over these three years. We found that six species experienced significant density changes, and five species dispersed from their original planted bands. Future work could examine dispersal dynamics of these species into surrounding restored riparian habitat. Our results will be used by River Partners to guide further restoration of similar sites that require transitioning assistance.

Ricardo Aguilar, Nicholas Detecting Shots in a Basketball Game from Motion
UF34 Eisemann, Aaron Shaffer Tracking Data

Abstract: When you watch a basketball game, sometimes you can just tell when a player is going to make a shot. Where the player is looking, where they're at on the court, how well defended they are. Your brain takes in all this detailed data, processes it at lightning speed, and makes a prediction. When that internal predicted probability is high enough, your gut tells you they're going for it! What if you don't get to see the game? Can we do the same given a data set containing motion tracking data obtained by video? This work presents the results of an algorithm developed by Chico State Data Science Teams for the Predictive Modeling Competition at the UC Davis 2017 iidata Data Science conference. The challenge was to use data to determine when Stephen Curry (a current star MLB player) was going to take a shot.

Matthew McDonald, Dr.
UF35 Daniel Edwards, Dr. Investigation of a Displacement Assay For Drug Design
Carolynn Arpin

Abstract: Experiential knowledge of drug design, synthesis, and evaluation is lacking from today's curriculum in the undergraduate chemistry laboratory. Thus, we intend to design a novel laboratory experiment through the development of a displacement assay that will evaluate the ability of drugs to bind to the active site of hemoglobin, an integral protein of the blood. This assay involves the fluorescent complex of apohemoglobin (hemoglobin with an empty active site) and 8-anilino-1-naphthalene-sulfonic acid (ANS); introduction of native hemin was shown to result in a loss of fluorescence, indicating the successful displacement of ANS from the protein's active site. We intend to displace ANS with various drugs which will be observed through this fluorescent indicator. The results of this research will be used to design an experiment for undergraduate chemistry students that will introduce them to the design, preparation, and assessment of drug activity. Our current goals include developing an ef

Kirstie B. Steiner, Malory
O. Brown, Sandra Martell,
Betsey Tamiotti, 2016 Meddling with microbial tubes: sheath production by
UF36 Microbial Genetics Class *Leptothrix cholodnii* SP-6
(BIOL 472), Emily J.
Fleming Nueter

Abstract: Metal-oxidizing bacteria (MOB) such as *Leptothrix-Sphaerotilus* generate complex surface structures to avoid entombment within an iron or manganese crust and to remain suspended in the water column. Their cellular machinery generates a highly ordered organometallic fibrillar microtubule sheath, which they have been producing for millions if not billions of years. The microtubule sheath structure is well known but assembly machinery and regulation of microtubule sheath production is not. Determining sheath-related genes in MOB is complicated by lack of a genetic system. We developed a genetic system, obtained several sheath mutants, and determined the genes disrupted. Cells were sensitive to several antibiotics, underwent conjugation, and had transposition frequencies of 2.9×10^{-4} . Several sheath mutants that either overproduced or did not produce sheaths were found. The genes associated with these mutants were linked to motility, suggesting a tie between sheath production and motility.

UF37	Dawn Clifford, Mayra Diaz, Caitlyn Seymour	HAES Curriculum
<p>Abstract: Health At Every Size (HAES) is a peace movement to end the obsession with weight loss and dieting. It is a holistic approach to health that centers around accepting and respecting diverse body shapes and sizes while promoting flexible and pleasurable eating and physical movement. Traditional curriculum found in nutrition and health textbooks centers around a weight-centered approach, which is associated with disordered eating, yo-yo dieting, and weight stigma. In 2012, the HAES Curriculum (www.haescurriculum.com) was developed to provide college and university instructors with materials to teach this weight-neutral, non-diet approach to students. This material is absent from most textbooks despite the extensive scientific evidence that the paradigm leads to improved physical and emotional health. The curriculum includes the following resources for instructors: three modules (which include PowerPoint files and a voiced-over presentation), assignment ideas, exam questions, and a resour</p>		

UF38	Jimmy Monge, Kristen Kaczynski	Native vs. non-native riparian inputs to California stream communities: a comparative leaf decomposition analysis
<p>Abstract: Decomposing leaves from riparian plants serve as the food base for most woodland streams. Changes to riparian composition by invasive species may alter the quality of inputs to stream ecosystems. The focus of this study was to observe the effect of the invasive fig tree (<i>Ficus carica</i>) as an input to California streams. We conducted a field experiment to determine how leaf litter from <i>F. carica</i> influences benthic macroinvertebrate (BMI) colonization and nutrient dynamics within Big Chico Creek, CA in comparison to three native species. We placed leaf packs of each species in stream and removed them after 25 days. A bioassessment and nutrient analysis were used to determine BMI abundance and the change in carbon and nitrogen content. Decomposition and nutrient loss was greatest in <i>F. carica</i>. The abundance of BMIs was lowest in <i>F. carica</i> leaf packs. These findings suggest that vegetative inputs of <i>F. carica</i> may be decreasing the quality of allochthonous resources in stream ecosystems.</p>		

UF39	Alberto Garrido, Rachel Teasdale, Jennifer M. Wenner	Textures and compositions of olivine and plagioclase in primitive basalts of the Poison Lake chain in the Lassen Region of the southern Cascades
<p>Abstract: The Poison Lake chain (PLC) is located 30 km east of the Lassen Volcanic Center. Basalts erupted from PLC cinder cones that are 10010 ka (1). Samples from one group of PLC basalts, bg, contain 5-10% olivine phenocrysts (cores: Fo84-88) and 7-20% plagioclase phenocrysts (cores: An72-87). Textural Types separate the bg group by disequilibrium textures (like embayed olivine and zoned plagioclase) which are a result of compositional and temperature variations in the magma. Heating experiments under constant oxygen fugacity, (fO₂), can be used to test liquidus temperatures and development of textures. Comparison of experiments with variable and constant fO₂ reveals important differences in crystal size and development of crystal textures in bg group basalts. This confirms that fO₂, which governs redox equilibria and crystal-melt partitioning (2), is an important experimental constraint in attempts to reproduce PLC Textural Types. (1) Muffler et al., 2011 (2) Brounce et al., 2014.</p>		

UF40	Jonathan Miller	Considering MMNA graphs of connectivity kappa=5
<p>Abstract: With the completed proof of "The Graph Minor Theorem", graph theory as a whole is on the brink of discovering new theorems, proofs, cases, and constructive examples of deep problems in the field. I have been investigating the finite list of minor minimal not apex graphs this last year and a bit. We know that for all graphs that are closed under taking minors (i.e., Apex Graphs), there are a finite number that are Not Apex. The finite list of graphs are almost Apex describe the entire class of graphs that are all apex. For example, graphs that are planar - that is, graphs that can be drawn on a plane with not edges crossing - have to almost planar obstructions, that is K₅ and K_{3,3}. There two graphs describe all planar planar graphs. Precisely a graph is planar if and only if it does not contain a K₅ or K_{3,3} minor. Furthermore a graph is Apex (meaning the removal of one vertex makes the graph planar) if and only if it does not contain one of the estimated 400 minor minima not apex graphs.</p>		

UF41	Sophia E Phillips, Charles G Brooke, Emily J Fleming Nuester	Determining the Relationship Between Biological Iron Oxidation and Mercury Mobility
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Abstract: Mercury is a potent biotoxin. The California coast is rich in both iron and mercury, and iron often transports mercury depositing it in estuarine ecosystems. Understanding interactions between mercury and iron is key to developing remediation strategies that keep mercury out of the marine ecosystem. In site surveys of a mercury contaminated marsh, iron-rich and FeOB-rich sediment mercury concentrations were lower than nearby sediment suggesting increased mercury mobility. I hypothesize biotic iron oxide production by iron oxidizing bacteria increases mercury mobility. To test this hypothesis I enriched for a marine FeOB to generate biotic iron oxides. I quantified the ability for mercury to be retained by abiotic oxides, biotic oxides, and naturally occurring oxides. I will use these data to grow FeOB under fluctuating redox conditions and monitor mercury bioavailability in the presence of biotic iron cycling.

UF42	Kirk Williams, Tori Goff, Eric Ayars	Quadcopter yaw: conservation of angular momentum or atmospheric drag?
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Abstract: Quadcopters (AKA "Drones") achieve yaw control through differential propeller rotation. Two props rotate clockwise, two counterclockwise, and increasing the rotational rate of one pair while decreasing the rotational rate of the other causes the quadcopter to turn in the direction of the slowed props. The primary mechanism by which yaw occurs is not entirely clear. One explanation is conservation of angular momentum: decreasing the angular momentum of one set of props causes a corresponding increase in angular momentum of the quadcopter itself. An alternate explanation is atmospheric drag: increasing the speed of the props increases the drag reaction torque, which turns the quadcopter. We can separate the two effects by looking at the rotation rate at varying air density. We are testing the relative strengths of these two effects by measuring the rotation rate of a quadcopter inside a vacuum chamber.]

UF43	Joshua Gladfelder, Dr. Carolynn Arpin	Synthesis of GRB2 SH2 Domain Inhibitors: Analogues of Sclerotiorin
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Abstract: GRB2 (Growth Factor Receptor-Bound protein 2) is known to be a critical downstream intermediary in several oncogenic signaling pathways. Significantly, the GRB2 homodimer was recently found to play a major role in the protein tyrosine kinase signaling of these oncogenic pathways. A peptidomimetic antagonist of the GRB2 SH2 domain (Src Homology 2), which has been shown to exhibit high affinity through in vitro studies, was tested on K562 leukemia cells with GRB2 overexpression. Unfortunately, no inhibition of protein activity was observed due to restricted cellular uptake resulting from the polar molecular motif. Thus, we resolve to create a library of compounds based on the natural product (+)-8-O-methylsclerotiorinamine, which has been shown to significantly inhibit binding between the GRB2 SH2 domain and the phosphopeptide derived from the Shc protein. The motivation, design, and synthesis of our library of antagonists will be presented, along with preliminary biological evaluation.

Student Class Projects

ID	Author List	Title
S1	Jamie Quinn, Kalyn Finch	Mothers Stroll
<p>Abstract: The most common complication of childbirth is postpartum depression and anxiety, which causes a substantial effect on the mother, the fetus or infant, as well as the rest of the family. Throughout the United States, 1 in 7 mothers suffer from perinatal mood and anxiety disorder (PMAD), and in Butte County alone, out of the total 2,784 deliveries in 2016, 710 women were within the PMAD spectrum. The purpose of this project is to increase awareness, support, and knowledge about a mother's emotional health during and after pregnancy. Mothers Stroll is a first time event being hosted by Mothers Strong, which is a community organization of new mothers, families, and agencies who are working together to help mothers who are affected by PMAD. We chose to participate in this community project to make a difference in the lives of mothers who may not have the adequate support systems that they may need. We want to encourage mothers that there is help available and that they are not alone. It is</p>		
S2	Alyssa Mandel, Paul Herrick	Examining the effectiveness of nutrition and physical activity education on adolescents
<p>Abstract: According to the Centers for Disease Control, one in five school aged adolescents are considered obese. Obesity can lead to being bullied, social isolation, and chronic health problems later on in life. We have implemented a program at the Chico and Oroville Boys and Girls Club to decrease adolescent obesity rates by teaching them lifestyle modifications including increased exercise, decreased screen time, and diet modifications.</p>		
S3	Keri Fong, Kristen Gularte, Jessica Kassel	Blood Drive in Memory of Kristina Chesterman
<p>Abstract: The purpose of this project was to educate the student population about the benefits of blood donation while honoring and carrying out Kristina Chesterman's passion for helping others in need. Nursing students partnered with BloodSource, American Association for Men in Nursing, and the California Nursing Students Association to provide students the opportunity to get involved and give back to the community. Education included: process of blood donation, blood components, and common myths and facts. The blood drive collected 143 pints of blood, potentially saving 429 lives. Give blood. Save a life. -BloodSource</p>		
S4	Ryan Beane, Jocelyn Bermudez, David Brown, Chad Dodge, Danny Fields, Nichole Hadler-Marsden, Julian Hopper, Evan Mason, James Matthews, Ryan O'Sullivan, Angelica Rodriguez, Matthew Suttles, Sarah Torkelson, Hannah Aird	A field and petrographic interpretation of the emplacement of the Bald Rock Pluton (BRP), northern Sierra Nevada
<p>Abstract: This study aims to determine how the compositional layers of the BRP formed and why the pluton composition grades from a mafic rim to a felsic core. There have been extensive studies on the evolutionary and formational processes of plutonic igneous bodies, but only two on the BRP. The study area was mapped using GPS and data were plotted on Google Earth. Strike, dip and trend data were recorded for all major dikes and plotted on Google Earth. Samples were collected and thin sections produced for petrographic analysis. The BRP comprises three distinct rock types: trondhjemite, granodiorite, and tonalite. All rocks are calc-alkaline. This research helps us understand how plutons are emplaced and how they evolve. Our new data could be integrated with existing data for the northern Sierra Nevada and high Sierra Nevada to understand the formation of the Sierra Nevada Batholith System and the Swedes Flat Pluton and the Yuba Rivers Pluton nearby; to further unravel the history of the region.</p>		
S5	Anh Ma, Adriana Ayala, Dicha Perez	Dynamic Uno to Dynamic Duos

Abstract: Students need to practice the valuable life skills of collaboration and cooperation in order to become better students, team members, and have the opportunity to succeed in group collaborations later in life. This research investigates small group dynamics and identifies complications that negatively affect students, decrease their opportunities for learning, and productivity. The study looked at the crosscutting concept of those who identify as emergent group leaders and those who did not. We anticipated to find students who initially do not like working in groups which would cause them to be reluctant to immerse themselves and trust in their group and reduce the groups productivity and the individual's learning. We also expected to find students who enjoy working in groups, but possess negative feelings about this collaborative learning process because other group members may not contribute to discussions. It was our hope to assess and pinpoint the issues that small groups possess

S6	Josue Solorio, Ashiana Antar	Promoting Health Equity in Migrant Families of Tehama County
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Abstract: Tehama County is the home to a large number of migrant families, a population commonly recognized for its vulnerability in terms of their overall health quality. This is a complex public health issue of multifactorial origins including, but not limited to, language barriers, socio-economic standing, deficient knowledge and government legislation that limits their access to publicly funded resources. In an attempt to promote health equity amongst its community members the Tehama County Department of Education and Tehama County Education Foundation will be hosting their annual Childrens Fair in Red Bluff, CA. My partner and I will have a booth to educate migrant families of Hispanic descent on health issues that are disproportionately affecting this population (e.g. hypertension, obesity, diabetes, etc.). Interventions will include assessing prior knowledge, noting and correcting misconceptions, encouraging questions and identifying resources available in the community for future support

S7	Natalie Wren	Disaster Health Services
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Abstract: The recent Oroville spillway incident made disaster health services and The American Red Cross relevant to our community. The purpose of this project is to highlight what The American Red Cross contributes in these situations and to identify some of the challenges and solutions that were experienced during this event.

S8	Miguel Puentes, McKenna Bourland	Wash Your Hands: The Do It Yourself Vaccine!
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Abstract: According to CDC the most important infection control measure to prevent illness in the community is HAND WASHING! Promoting proper hand washing behaviors in Elementary-school-aged-children is a cost effective way to prevent the spread of infectious diseases. Since studies show that unwashed or improperly cleaned hands are the primary carriers of infection - effective lesson plans and activities can drastically reduce the spread of germs in school aged children. By making hand washing practices a part of the daily routine - we are empowering the future of our community with the essential knowledge to combat germs.

S9	Nick McConnell, Travis Bybee, Jen Culver, Kevin Carlson	Productive Problem Solving
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Abstract: When people think of the term Struggle, they often associate it with a negative connotation, but in reality a struggle can be a good way to build a strong conceptual understanding of the material in question. Students may have trouble starting a problem, commit an error or have a misconception during the solution process, and experience difficulty explaining their process or carrying out a procedure, but this struggle can be overcome with different processes of teaching. Our project analyzes the role of student productive struggle and how LAs facilitate conceptual understanding through appropriate responses. including telling, direct guidance, probing guidance, and affordance. We looked into how exactly students struggle with certain concepts and the effectiveness of different methods for different circumstances.

S10	Joseph Levine, Zach Minneker, Blake Northam, Bryce Channel	Do Study Groups and Social Interactions Affect Student Growth?
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Abstract: Does trying to do well in your classes actually make you do worse? We spent an entire semester trying to find out, by offering study groups to students in math classes, and then tracking their test scores over that time.

S11	Robin Kropholler, Moriah Edwards, Daniel Lomeli, Brittany Munoz, Andrea Partida-Miranda	Addressing Misconceptions in Science: The Role of GE Biology
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Abstract: Understanding core biological concepts serves an important role in creating a well-rounded, well-informed members of society; we frequently make critical social and political decisions dependent on science. Thus, many colleges, including California State University, Chico, include in their general education requirements that students take both a physical and life science course. The purpose of this study was to determine the effectiveness of a general education biology course on students knowledge around common misconceptions in biology. Three different sections of the same biology course, Biology 102: Introduction to Living Systems, were surveyed before and after a 5 week course focused on Ecology. Among the three class sections, students volunteered to participate in surveys conducted before and after instruction (n=118). The results from the pre- and post-survey were analyzed and compared to determine if there were any significant changes in understanding or differences among vari

S12 Drew Fisher, Haylee
Vowles, Marissa Indgjer Girls on the Run

Abstract: Three public health nursing students coach 3rd-5th grade girls in the after-school program, Girls on the Run (GOTR). The coaches use a research-based curriculum that incorporates running, with lessons that focus on social, and emotional life skills. In addition, the girls gain an appreciation for physical activity that can be carried on throughout their lives. In line with the Girls on the Run mission, the coaches help the girls on the team learn to identify their own strengths and weaknesses with the use of age appropriate interventions. These help girls explore social and emotional challenges while learning about teamwork and healthy relationships. Practices occur twice a week in a structured, supervised setting. In these practices, the coaches use progressive learning techniques, laid out from a coachs handbook, to instruct the girls on essential skills such as problem solving, communication, and empathy. Since 2002, Girls on the Run International has evaluated program efficacy th

S13 Dr. David Brookes, Jessica
Burris, Kelsey Haigh,
Miriam Ibarra, Sofia Your Locus of Control is Showing
Rodriguez,

Abstract: Locus of control is the psychological construct of whether a person believes that he/she can influence their events and outcomes. We are interested in whether ones locus of control can determine students success of learning. This project, which is part of a broader study, focuses on constructing survey questions that may be used to learn about students locus of control orientation. Interviews were conducted in order to find commonalities between students and to better understand how students view their role in the class. Their responses were categorized into internal, external or unclear orientations. The main purpose of the interviews is to help write survey questions to give to all students of both traditional and non traditional lecture courses.

S14 Amber Theresa Adams,
Allison Nelson Building a Bridge- Sexual Assault and the Campus
Community

Abstract: Sexual assault is a problem in Butte County that cant be ignored. To keep the public informed of this issue, the Butte County Sexual Assault Response Team (SART) report is published every couple years. This report presents statistics, vignettes, and updates. Although many victims of sexual assault attend either CSU, Chico or Butte Community College, past reports have not explored the prevention efforts being done on these campuses. This project strived to open communication within the community and campuses, and to gather information pertaining to the campus community and sexual assault, to be included in the 2015-2016 SART report. After interviewing campus organizations, and participating in some events on campus, we summarized and presented our findings to the authors of the 2015-2016 SART report. There is much being done in the community and on campus to prevent sexual assault and to support survivors. However, there is more work to be done to encourage collaboration between the ca

S15 Will Mixter, Jared
Sweatmen, Cameron Characterization of a High Power Laser Beam
Sorensen, Daniel Wells

Abstract: Nd:YAG lasers are used in a variety of fields such as military, manufacturing, and medicine; primarily ophthalmology and dentistry. With a wide range of applications its important to understand the ways that the laser beam can propagate. Were able to find how the laser beams propagation and behavior is characterized through optical instruments by measuring the M2 number. To do this well be using the Ophir M2-200s Beam Propagation Analyzer to measure the M2 of Continuum Surelite Nd: YAG laser. The analyzer consists of a camera that is connected to a computer program. With taking images of the beam profile at different locations, the program can produce the M2 value and the waist location. From these values we will be able to accurately calculate the Rayleigh range and the beam divergence angle. This laser will be used for other experiments in the future by students and faculty. Having this data will be necessary in order to implement theoretical calculations into the experiments.

S16	Rodney Worthington, Ricardo Aguilar, Kaitlyn Huntley	Road to Success in Mathematics
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Abstract: College precalculus presents many mathematical concepts very quickly. Some students will have forgotten important concepts or cannot correctly apply them. Mathematical learning is progressive in nature therefore any misconceptions developed along the way can cause problems down the road. Online videos are accessible anytime, anywhere the student has an appropriate device and internet. Our online video tutorials seek to weed out misconceptions while taking the student's learning forward with new material. They give students the opportunity to address misconceptions through sub-video tutorials. These sub-videos present themselves during the main video and they choose to watch the sub-videos necessary. The journey to success in mathematics is unique to each student. Our video tutorials create unique learning experiences for each student.

S17	Dinesh Khalasi, Elizabeth Freitas, Tanner Talon	Investigation of Retention Improvement through Interactive Learning
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Abstract: This investigation explores the effects on students retention by supplemental instruction (SI) focused on interactive learning style comparatively to a traditional lecture style. Research suggests students attending interactive learning SI perform better on questions cover outside of the classroom. In an investigation of the Principles of Cellular and Molecular Biology class at CSU, Chico, 7 students received SI on the topic of DNA replication. The groups responses on the following exam were compared to the class average for 8 questions involving DNA replication and 8 questions that did not. The investigation observed any deviations exhibited by the experimental group from the control in their ability to score higher on materials covered in SI sessions. The data suggest that students who attended SI performed better overall on exam questions but performed better more consistently with questions not pertaining to DNA replication.

S18	Katherine Williams	An Investigation of the Relationship Between Food Cravings and Pre-biotic and Pro-biotic Intake Among College Students
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Abstract: Objective: The aim of this study was to explore whether a relationship exists between food cravings and prebiotic (fruits, vegetables, beans and whole grains) and probiotic intake (supplements and fermented foods). Methods: The previously validated Food Cravings Questionnaire Trait- Reduced (FCQT-reduced) was used to measure, food cravings. A unique intake questionnaire was developed to measure intake and factor analysis performed yielding 2 factors: Prebiotic Foods and Non-prebiotic Foods. Multiple linear regression was used to analyze the effects of these two factors along with other variables of interest (probiotic and fermented food intake as well as digestive distress) on food cravings. Results: Increased intake of fermented foods significantly predicted reduced food cravings ($\beta = -2.04$, $p=0.022$) while increased probiotic supplement intake predicted increased food cravings ($\beta = 2.93$, $p=0.007$). Conclusions and Implications: While it is unclear why supplement intake would differ

S19	Linda Vue, Catherine Bailey	Torres Shelter Men's Health Promotion
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Abstract: There are more resources in Chico for homeless women and children than men. The Torres Shelter Mens Health Promotion project was aimed to promote nutritional and physical health for the men at the Torres Shelter. An interactive workshop was created to educate on MyPlate, healthy eating, and foot care. The project leaders spent one whole evening volunteering at the shelter to become accustomed to its operations. Donations were requested from different corporations but only Raleys donated ingredients to make healthy cookies for the project. The project leaders put boots on the ground and walked door to door to ask for monetary donations to buy socks for each participant. All community members donated an item or money and the project goals were exceeded. The workshop was carried out on a Friday evening at the Torres shelter after dinner. The men were interactive and attentive. Surveys showed the men gained more knowledge about nutrition and foot care after participating in the workshop.

S20	Lilli Consiglio, Nicole Riner	Fairview High School's Young Mothers Program
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Abstract: The Young Parent Program at Fairview High School is designed to educate teenage mothers who are currently pregnant and who have already given birth. This program targets young teenage mothers who may lack the education, resources, and support they need to have a healthy pregnancy and raise a child. Working with two different classes, the parenting class and the expecting mothers class, CSU Nursing students prepared lessons each week based on each groups needs, such as information about safety, vaccinations, developmental milestones, and stages of labor. The last class session was spent teaching each class adult and infant CPR and choking. Overall, the class project provided valuable knowledge and skill sets that these mothers can carry forward with them throughout parenthood.

S21	Taylor Walker, Marissa McCready	Nursing Students Walk for Awareness
<p>Abstract: Chico State Nursing Students completed a community project working with the American Cancer Society in the Relay for Life on May 6th and 7th. They worked with various community members to raise awareness, and fundraise money to support the efforts the American Cancer Society makes in the fight against cancer. All money raised helps fund for cancer research, critical patient care services, and education/prevention initiatives. Multiple team members were recruited to be apart of their relay team, Chico State Nursing, and they each took turns walking in the relay. The relay itself consists of a continuous walk for 22 hours, and teams always have at least one person on the track to represent the continuous battle against cancer. During the relay a booth providing education and prevention techniques specifically for skin cancer.</p>		
S22	Courtney Rhodes, Josh McAtee	Protein: The Devil's in the Details
<p>Abstract: The concept of interest that was looked at was human digestion, absorption, and metabolism of food. The topic that was specifically identified was students understandings of concepts of human protein metabolism, where they get confused within these concepts, and how they go wrong. To get a better understanding of this topic, students who were currently enrolled in NFSC 340 were interviewed. The students were interviewed before receiving instruction on the protein unit to assess their pre-existing foundation in regards to proteins. After the students had completed the section on proteins, they were interviewed again to assess how their understanding had progressed and areas that they found confusing and/or difficult. Students are not feeling confident on the material they learned on protein metabolism. This lack of confidence appears to stem from difficulty understanding and retaining the multitude of small details involved in protein digestion, absorption, and metabolism. The</p>		
S23	Tristin Brownlee, Ellie Haydock, Susan Reed	Vets Helping Vets
<p>Abstract: The main purpose of our project was to assess the needs of the homeless veterans in our society and look for outreach, which can benefit them. The initial problem we encountered is the fact that 22 veterans commit suicide everyday. One of the most important ways to prevent suicide is to education the community about this risk so that they can help the veterans beforehand. We started by conducting a survey of people in downtown Chico about what they know about suicide with veterans. We got our initial results, which were very low. We then conducted a raffle to raise money for Vectors as well as spread the word about the prevalence of vet suicide. After educating people again in downtown Chico we are hoping that the results grow in numbers with the population that understands the prevalence and what they can do to help. We educated about ways to get involved such as ways to donate to Vectors as well as ways to personally help out veterans such as supplying them jobs to help them transit</p>		
S24	Austin Rossi, Bryce Channel, Faisal Shaikh	Holography
<p>Abstract: Holography is a 3-D imaging technique, which uses a laser to record the light waves reflected off of a target onto a film. This differs from photography in that instead of light exposure an interference pattern is recorded, which contains information about both the amplitude and phase of the light used to record. We successfully created holograms using two methods to project a holographic image which are reflection and transmission holograms. In both, a laser beam is split into two light beams that have the same frequency and polarization, called the reference and object beams, meet at a light sensitive film and create an interference pattern. In reflection holography the object beam illuminates the target and is reflected to the film while the reference beam illuminates the photographic plate directly providing reference. In transmission holography the reference beam is directed at the film, and the object beam is allowed to pass through, reflecting off the target back into the film.</p>		
S25	Austin Pollard, April Nuestro	Waving Goodbye to Our Physics Problems
<p>Abstract: The purpose of this project is to examine the impact that Learning Assistant (LA) led problem-solving sessions have on student understanding of the material covered in a physics course, in this case their understanding of the wave nature of light and its interactions with diffraction gratings. Optional problem-solving sessions (PSS) were offered twice a week over the course of the semester that covered homework problems and, in the week before and of a test, reviewed the material that would be most relevant to an exam. After accounting for the possibility of PSS-attending students self-selecting themselves for success, students that attended PSS before an exam scored, on average, 7% higher than the class average on material covered in PSS, and 10% higher on average than students that did not attend PSS. Given further resources, we believe it would be valuable to examine this trend over the course of multiple more exams and with larger groups of students, as some of our data could be li</p>		

S26	Stephanie Watson	Examining the Effectiveness of Daily Social Interaction and Activity Among the Elderly
<p>Abstract: The elderly population exhibits a high risk of social isolation and depression due to a decrease in daily activity and interaction with others. With the help of adult day care centers such as The Peg Taylor Center, this population is able to engage with others in daily conversation, exercise, arts and crafts, and other activities. For this project, I helped to engage the group in social conversation while they simultaneously participated in an art project. This interaction can help to reduce the risk of isolation and help to promote healing and living satisfying lives through therapeutic communication and physical activity.</p>		
S27	Madalina Ciurea, Silvia Diaz	Healthy Lifestyle
<p>Abstract: Mental Health has become an important topic that needs to be recognized. The stigma associated with mental health not only makes it difficult to discuss, but often leads to being overlooked. Heart disease is the leading cause of death in the United States. One way to manage heart disease is by maintaining a blood pressure within normal limits. This can be done through a healthy diet, exercise, and medications. For our community public health project we decided to organize a health fair that would promote and educate participants about healthy lifestyles. After assessing the community needs, we conducted a survey to determine the topics covered. The health fair allowed the participants to visit each booth. There were screening tools such as blood pressure and blood glucose readings that helped the participants get an idea about whether they should contact their primary care provider. A survey at the end of the health fair revealed the extent of their learning.</p>		
S28	Patrick Hartrum, Haley Howeson, Emilia Spittler	Four Winds After School Program
<p>Abstract: For their public health community project, fifth semester nursing students created and implemented a weekly after school health education program for classes of K-8 students at the Four Winds Indian Education Center in Chico, CA. Among the topics taught were heart health, nutrition, oral hygiene, hand hygiene, and protecting the environment. Following each lesson, a relevant hands-on craft and/or activity was incorporated into the time spent with the students to emphasize the importance of the material learned and promote wellness through exercise and physical activity. The overall objectives of the project were to determine the level of knowledge of healthy habits in elementary school children, and to further teach about these topics as a primary prevention of illness.</p>		
S29	Justin Casas, Stefani Aston	Speak Your Mind: Silence the Stigma
<p>Abstract: Our community project is focused on educating about and reducing the stigma surrounding mental illness. Our target population consisted of two groups of nursing students: 1st and 5th semester. The following interventions were implemented to educate and reduce stigma for both groups: a PowerPoint presentation and sharing our own experiences with mental illness. To measure each groups knowledge and misconceptions about mental illness, pre and post testing was conducted. After analyzing the data, we came to the conclusion that sharing our experiences with mental illness was successful in disproving misconceptions for both groups. Overall, the data shows our presentation and experiences have a positive effect on reducing mental illness stigma for both groups.</p>		
S30	Jonathan Petersen	Assessing the need for HIV Pre-exposure Prophylaxis (PrEP) education in the Chico Community.
<p>Abstract: There is a lack of patient awareness of HIV PrEP (Pre-exposure prophylaxis) in the Chico area, as evidenced by lack of knowledge with providers and the general community. I chose this topic because PrEP has become a unique interest to me that I have begun to study more and more. I know that if more people took the medication, we would be able to decrease the incidence of HIV transmission in the Chico area over the next few years. The purpose of my community project is to assess the need for HIV PrEP awareness in the Chico area and educate on the benefits of PrEP. The main points of this project included assessing the need for PrEP awareness in the Chico community, increasing knowledge and awareness of PrEP, and promoting PrEP use to vulnerable populations (men who have sex with men, IV drug users, etc). Interventions for this project included promoting PrEP education at the Men In Nursing Public Health Fair on campus, and the Student Health Center. and assessing the community knowledge</p>		
S31	Clair Lowden, Elizabeth Pham, Kyle Phillips, Kelsey Orr, and Steven Sheppard	Fiber laser

Abstract: Fiber lasers are becoming increasingly popular in industries ranging from medicine to manufacturing due to their wavelength specification, reliability, and compact size. The Physics Department recently acquired the first fiber laser for our Optics & Lasers lab. For our class project, we are examining various properties of the new instrument. We will demonstrate methods of calibrating attenuators, investigating the effects of intra-cavity losses, and determining the dynamic response of the laser. Through hands-on experimentation, we are actively learning how fiber lasers work and the effect of different design parameters on the output characteristics of the laser .

S32	Tori Goff, Kyle Riemenschnitter, Jared Sweatman	Ulterior Motives: The Dark Energy that Fuels Student Learning
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Abstract: Our project is based on a survey written by The College of Education at the University of Georgia entitled Science Motivation Questionnaire II. Research has shown that highly motivated students perform better in their courses and throughout their school careers. Our intent to research is to start looking deeper into the motivation that students must learn in their classes and the way that this mindset affects their performance and enjoyment in the course. We administered the survey to two different classes: Physics 204A and Physics 204B at Chico State, finding generally that science majors similarly motivated compared to non-science (engineering) majors, course enjoyment is directly related to motivation, and that 204A students were more motivated than 204B students. We see further research in this field being used to better understand how to tailor classes to students to best optimize learning for all students.

S33	Shannon Watson, Julie Wilson	Every Woman Counts
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Abstract: Cervical cancer is the leading cause of cancer death in women, with breast cancer following closely behind it in second place. In a given lifetime, one in every eight women will be diagnosed with breast cancer. Since pap tests and mammograms are the only two screening measures that can accurately detect cervical or breast cancer, Every Woman Counts strives to provide these resources to women in need. Every Woman Counts (EWC) is a state-funded agency that serves ten regions covering the entire state of California, and is a part of the Department of Health Care Services' Cancer Detection and Treatment Branch. Services are offered to qualifying women who live in California, have low income, and limited or no insurance. The main goal of the agency is to diagnose and treat breast/cervical cancer as early as possible, but also to teach prevention strategies through education and outreach. The purpose of our project was to analyze the public health nursing role in providing care, prevention,

S34	Tara Rowland, Danielle Marks	Chico State Hungry Wildcat Pantry
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Abstract: As a result of skyrocketing tuition costs, college students across the state of California have developed food insecurities that have become unavoidable. As stated by David Tomar in TBS Magazine, in 1971 the average cost of tuition for one year for public colleges in the state of California was around \$500. In 2013, the average cost of tuition for one year was \$9,139 (2017). The same organization conducted an internal survey among nine universities and determined that 25% of undergraduates have skipped meals in order to compensate for the lack of funds. California State University, Chicos campus is no exception to this statistic. The Chico State Hungry Wildcat Pantry works to help those students who have a food insecurity by providing healthy foods and hygiene products, makes referrals, and help students get in touch with food insecurity programs such as CalFresh. Two public health nursing students wanted to choose a community project that allowed them to get involved by directly help

S35	Stacie Dempsey	A Look at Tehama County's Knowledge of Sexually Transmitted Infections
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Abstract: The rates of reportable sexually transmitted infections are on the rise. There are approximately 20 million new cases of sexually transmitted infections in the United States each year (Centers for Disease Control and Prevention [CDC], 2016). About half of those cases are found within the 15-24 year old population (CDC, 2016). In Tehama County in 2015, 46% of all new cases of Chlamydia and 47% of all new cases of Gonorrhea, were found in this young adult population (California Department of Public Health [CDPH], 2016). The purpose of this project was to identify knowledge deficits related to sexually transmitted infections in the at-risk continuation high school population of Tehama County and to provide education to increase this population's knowledge base. It is a hope that increasing this population's knowledge of sexually transmitted infections, could lead to a decrease in the incidence of reported cases within Tehama County.
