

# PROCEEDINGS OF THE KECK GEOLOGY CONSORTIUM

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2019-2020 Projects

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## 2019-2020 Projects

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### Keck Geology Consortium Member Institutions:

*Amherst College, Beloit College, Carleton College, Colgate University, The College of Wooster, The Colorado College, Franklin & Marshall College, Macalester College, Oberlin College, Pomona College, Smith College, Trinity University, Union College, Washington & Lee University, Wesleyan University, Whitman College*

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## 2019-2020 GATEWAY PROJECTS

### **RESILIENCE AND DECLINE: ARE WE AT A TIPPING POINT FOR ENDANGERED *ACROPORA* SP. CORALS IN BELIZE?**

**Faculty:** LISA GREER, Washington and Lee University and KARL WIRTH, Macalester College

**Students:** NICK AN, Oxford College of Emory; CATHERINE CATERHAM, Franklin and Marshall College; MATTEA HORNE, Pomona College; ARTHUR MABAKA, Washington and Lee University ; WILLIAM RILEY, Vassar College; JOLIE VILLEGAS, Wesleyan University; SYDNEY WALTERS, Colgate University; RILEY WATERS, Macalester College; PETRA ZUNIGA, Amherst College

### **EXPLORING LATE CRETACEOUS WETLAND ECOSYSTEMS: DINOSAURS AND VERTEBRATE MICROFOSSILS IN MONTANA**

**Faculty:** RAYMOND ROGERS and KRISTI CURRY ROGERS, Macalester College

**Students:** NOLAN CLARK, Pomona College; SEDALIA GOMEZ, Amherst College; KATHERINE IRVING, Macalester College; ASHA LANG, Smith College; GABRIELA ROAT, Colorado College; SUN TUN, Macalester College; KAYLEE VELASQUEZ, Union College; PETER ZIMMERMANN, Oberlin College

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## 2019-2020 ADVANCED PROJECTS

### **BODY SIZE EVOLUTION OF THE FIRST MAMMALIAN MEGAHERBIVORE DURING PALEOGENE HYPERTHERMAL EVENTS, WYOMING**

**Faculty:** MICHAEL D'EMIC, Adelphi University and SIMONE HOFFMANN, New York Institute of Technology

**Students:** GRANT BOWERS, University of Maryland; MICHAEL FORD, Missouri University of Science and Technology; RICHARD GONZALEZ, University of Texas at San Antonio; DANIKA MAYBACK, Illinois State University; EMILY RANDALL, The College of Wooster; ISAAC SAGEMAN, Northwestern University

### **USING 3D PETROGRAPHY OF MICROLITES AND BUBBLES IN OBSIDIAN TO ASSESS FACTORS GOVERNING ERUPTIVE STYLE FOR RHYOLITIC MAGMAS**

**Faculty:** KURT KNESEL, Trinity University

**Students:** CHLOE CAMPO, Trinity University; BROOKE DYKSTRA, University of Illinois at Urbana-Champaign; JULIANA FLINT, SUNY Plattsburgh; ZENJA SEITZINGER, SUNY Geneseo

**2019-2020 ADVANCED PROJECTS – Continued**

**UNRAVELING THE CONTROLS ON CHANNEL FORM AND GEOMORPHIC HISTORY IN  
NORTHERN YELLOWSTONE NATIONAL PARK, WYOMING**

***Faculty:*** LYMAN PERSICO, Whitman College

***Students:*** MARK FOKY, Whitman College; ALICE HINZMANN, Carleton College; CHANTAL IOSSO,  
Washington and Lee University; APRIL PHINNEY, Wheaton College (IL); ELIZA VAN WETTER, Whitman  
College

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## **Short Contributions and Poster Presentations – Belize Gateway Project**

### **RESILIENCE AND DECLINE: ARE WE AT A TIPPING POINT FOR ENDANGERED *ACROPORA* SP. CORALS IN BELIZE?**

LISA GREER, Washington and Lee University; KARL WIRTH, Macalester College; GINNY JOHNSON, Washington and Lee University

### **THE RESPONSE OF ALGAE AND HERBIVORES TO *ACROPORA CERVICORNIS* CORAL DECLINE: A CASE STUDY IN CORAL GARDENS, BELIZE**

CATERHAM, C. R.; AN, N.; WALTERS, S.; MABAKA, A.; JOHNSON, G.; WIRTH, K. R.; GREER, L.

### **LIVING SPACES: QUANTIFYING MORPHOLOGICAL DIFFERENCES IN *ACROPORA* SPP. CORALS USING 3D PHOTOGRAMMETRY**

HORNE, M.; VILLEGAS, J.; WALTERS, S.; PFAFF, D.; JOHNSON, G.; WIRTH, K. R.; GREER, L.

### **BROWNING OF THE GOLDEN TIDE: IMPACTS OF ACCUMULATED SARGASSUM ON SEA WATER QUALITY IN AMBERGRIS CAYE, BELIZE**

ZUÑIGA, P.; RILEY, W.; WATERS, R.; JOHNSON, G.; GREER, L.; WIRTH, K. R.

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## **Short Contributions and Poster Presentations – Montana Gateway Project**

### **EXPLORING LATE CRETACEOUS WETLAND ECOSYSTEMS: DINOSAURS AND VERTEBRATE MICROFOSSILS IN MONTANA**

RAYMOND ROGERS and KRISTI CURRY ROGERS, Macalester College

### **CAPTURING A LATE CRETACEOUS PALEOFAUNA: A NEW VERTEBRATE MICROFOSSIL BONEBED IN THE UPPER CRETACEOUS (CAMPANIAN) JUDITH RIVER FORMATION, MONTANA**

ROAT, G.E., GOMEZ, S.P., TUN, S.M., IRVING, K.I., LANG, A.D., CLARK, N.D., ZIMMERMANN, P.K., VELASQUEZ, K.R., ROGERS, R.R., AND CURRY ROGERS, K.

### **TAPHONOMIC COMPARISON OF VERTEBRATE MICROFOSSIL BONEBEDS FROM THE UPPER CRETACEOUS JUDITH RIVER AND HELL CREEK FORMATIONS OF MONTANA**

ZIMMERMANN, P.K., LANG, A.D., ROAT, G.E., VELASQUEZ, K.R., TUN, S.M., IRVING, K.I., GOMEZ, S.P., CLARK, N.D., CURRY ROGERS, K.A., AND ROGERS, R.R.

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## Short Contributions – Wyoming Advanced Project

### **BODY SIZE EVOLUTION OF THE FIRST MAMMALIAN MEGAHERBIVORE DURING PALEOGENE HYPERTHERMAL EVENTS, WYOMING**

MICHAEL D'EMIC, Adelphi University and SIMONE HOFFMANN, New York Institute of Technology

### **LONG BONE HISTOLOGY OF THE LARGE PALEOGENE MAMMAL *CORYPHODON***

GRANT BOWERS, University of Maryland

Research Advisor: John Merck

### **ESTIMATING THE BODY MASS OF THE LARGE PALEOGENE MAMMAL *CORYPHODON***

RICHARD GONZALEZ, University of Texas at San Antonio

Research Advisor: Thomas Adams

### **USING CEMENTUM HISTOLOGY TO ESTIMATE AGE IN THE PALEOGENE MAMMAL *CORYPHODON***

DANIKA MAYBACK, Illinois State University

Research Advisor: David Malone

### **PALEOENVIRONMENTS CONTAINING *CORYPHODON* IN THE FORT UNION AND WILLWOOD FORMATIONS SPANNING THE PALEOCENE-EOCENE THERMAL MAXIMUM (PETM), BIGHORN BASIN, WYOMING**

EMILY RANDALL, The College of Wooster

Research Advisor: Mark Wilson

### **CLIMATIC AND PALEOENVIRONMENTAL CHANGES ASSOCIATED WITH THE EVOLUTION OF *CORYPHODON* THROUGH PALEOGENE HYPERTHERMAL EVENTS, BIGHORN BASIN, WYOMING**

ISAAC SAGEMAN, Northwestern University

Research Advisor: Matthew Hurtgen

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## Short Contributions – Rhyolitic Magmas Advanced Project

### **USING 3D PETROGRAPHY OF MICROLITES AND BUBBLES IN OBSIDIAN TO ASSESS FACTORS GOVERNING ERUPTIVE STYLE FOR RHYOLITIC MAGMAS**

KURT KNESEL, Trinity University

### **PRE-ERUPTIVE TEMPERATURES AND ERUPTION DYNAMICS OF RHYOLITE LAVA, NIMBIN RHYOLITE, EASTERN AUSTRALIA**

CHLOE CAMPO, Trinity University

Research Advisor: Kurt Knesel, Trinity University

### **MICROLITE ORIENTATIONS AND STRAIN LOCALIZATION WITHIN THE BASAL SHEAR ZONE OF A LARGE RHYOLITIC LAVA, MINYON FALLS, AUSTRALIA**

BROOKE DYKSTRA, University of Illinois at Urbana-Champaign

Research Advisor: Patricia Gregg

### **FLOW BANDS AND MICROLITE TEXTURES IN OBSIDIAN, MINYON FALLS RHYOLITE, AUSTRALIA**

ZENJA SEITZINGER, SUNY Geneseo

Research Advisor: Dori Farthing

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## **Short Contributions – Yellowstone Advanced Project**

### **UNRAVELING THE CONTROLS ON CHANNEL FORM AND GEOMORPHIC HISTORY IN NORTHERN YELLOWSTONE NATIONAL PARK, WYOMING**

LYMAN PERSICO, Whitman College

### **UNRAVELING THE GEOMORPHIC HISTORY OF BLACKTAIL DEER CREEK**

TRENT FOKY, Whitman College

Research Advisor: Lyman Persico

### **POTENTIAL MECHANISMS OF GEOMORPHIC CHANGE OPERATING ON FLOODPLAIN AND CHANNEL FORM ON THE GALLATIN RIVER IN NORTHWESTERN YELLOWSTONE**

ALICE HINZMANN, Carleton College

Research Advisor: Mary Savina

### **CLIMATE INFLUENCES ON STREAM PROCESS IN YELLOWSTONE OVER THE LAST 7000 YEARS: A LOOK AT THE STRATIGRAPHIC RECORD**

CHANTAL IOSSO, Washington and Lee University

Research Advisor: David Harbor

### **GEOMORPHIC CONTROLS ON HYDRAULIC PROCESSES OF BLACKTAIL DEER CREEK, YELLOWSTONE NATIONAL PARK**

APRIL I. PHINNEY, Wheaton College (IL)

Research Advisor: Andrew J. Luhmann

### **EVERY PEBBLE COUNTS: RECONSTRUCTING THE FLUVIAL HISTORY OF BLACKTAIL DEER CREEK IN THE NORTHERN RANGE OF YELLOWSTONE NATIONAL PARK**

ELIZA VAN WETTER, Whitman College

Research Advisor: Lyman Persico