

Benjamin John Burger

Curriculum Vita

Education

Doctor of Philosophy (PhD) - 2009

Geological Science

University of Colorado, Boulder, CO

Advisor: Dr. Jaelyn Eberle

Dissertation title: Mammalian faunal change across the Paleocene-Eocene boundary in the Piceance Creek Basin, Western Colorado

Masters of Science (MS) - 1999

Anatomical Science

State University of New York, Stony Brook, NY

Advisors: Dr. David Krause and Dr. Catherine Forster

Thesis title: The systematics and phylogeny of the fossil Hyopsodontidae (Mammalia, "Condylarthra").

Bachelor of Arts (*Magna Cum Laude*) (BA) - 1997

Geological Science

University of Colorado, Boulder, CO

Professional Experience

2011 – Present: Utah State University, Uintah Basin, Vernal Utah

Assistant Professor of Geology

I teach courses in paleontology, stratigraphy, and geology, as well as mentor graduate students at the Uintah Basin campus of Utah State University. I oversee the geology research laboratory at the Vernal Campus.

2009-2011: SWCA Environmental Consultants Vernal, Utah

Paleontology Specialist

Conducted paleontology surveys and fossil salvage operations during the construction of industry infrastructure for oil and gas development on public lands within northeastern Utah and western Colorado.

2004-2008: Department of Geological Sciences University of Colorado at Boulder

Lead Graduate Teacher and Graduate Instructor

1999-2004: Division of Paleontology American Museum of Natural History, NYC.

Director of Databases and Network Systems

Inventoried and imaged one of the largest collections of fossils in North America.

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Courses Taught

Vertebrate Paleontology (Utah State University)

-An advanced graduate level course on the fossil record of fossil vertebrates (Spring 2013, Fall 2014, Fall 2016)

Invertebrate Paleontology (Utah State University)

-An advanced graduate level course on marine invertebrate paleontology and terrestrial paleobotany, taught using interactive broadcast across Utah. (Fall 2012, Fall 2013, Fall 2015)

Natural History of Dinosaurs (Utah State University)

-A depth physical science course on dinosaur paleontology (Spring, 2014, Spring 2015, Spring 2016)

Sedimentary Petrology (Utah State University)

-An advanced graduate level course on sedimentary rocks under thin section (Fall 2012, Fall 2015)

Earth Through Time (Utah State University)

-An in depth class that explores the history of planet Earth, including its geological and paleontological history, taught using interactive broadcast to Price Utah. (Spring 2012)

Integrative Physical Science (Utah State University)

-An introductory science course that fulfills undergraduate breadth credit for non-major undergraduate students, taught using interactive broadcast across Utah (Fall 2011, Spring 2012, Fall 2012, Spring 2013)

Integrative Physical Science—Online Course (Utah State University)

-An introductory fully online science course that fulfills undergraduate breadth credit for non-major undergraduate students. (Fall 2013, Spring, 2014, Fall, 2014, Winter Tri-Semester, 2014/15, Spring, 2015, Spring 2016)

Advanced Stratigraphy (Utah State University)

-Advanced graduate level stratigraphic geology course that covers concepts of sequence stratigraphic models, and application of facies analysis in petroleum exploration (Fall 2011, Fall 2013, Fall 2014)

Geology Field Camp (Utah State University)

-Taught 1 week in a 6 week field course on geology, as part of Utah State's capstone field geology class for undergraduate majors. (Summer 2013)

The Dynamic Earth (Utah State University)

-A traditional classroom introductory physical geology course. (Fall 2010)

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Global Change (University of Colorado at Boulder-Honors Program)

- A course utilizing an earth systems approach, with an emphasis on global climate change throughout time. (Spring 2008)

Introduction to Geology Laboratory (University of Colorado)

- A field based geology course that introduced students to the geologic history of the Front Range of Colorado. (Fall 2004, Spring/Fall 2005, Fall 2008)

Human Anatomy (State University of New York at Stony Brook)

- Laboratory portion of a course on human anatomy directed toward pre-med and pre-dentistry students. (Fall 1998)

Paleontology Field Experience

Washakie Formation, Wyoming (2013, 2014, 2015)

Collection of fossil Eocene mammals from the Abode Town Member, Southwestern Wyoming.
Repository: Utah Field House Museum of Natural History

Browns Park Formation, Colorado (2013)

Collection of fossil mammals from the Miocene strata in Northwestern Colorado.
Repository: Utah Field House Museum of Natural History

Morrison Formation, Utah (2012-2014)

Screen washing for Jurassic mammals along the Split Mountain Anticline, Northeastern Utah
Repository: Utah Field House Museum of Natural History

Rock Springs Uplift, Wyoming (2009-2010)

Collection of fossils in the Paleogene rocks exposed along the margins of the Washakie Basin.
Repository: University of Colorado Museum.

Piceance Creek Basin, Colorado (2005-2011)

Collection of fossil mammals across the Paleocene-Eocene boundary in western Colorado.
Collaborators: Jaelyn Eberle and James Honey (UCM)
Repository: University of Colorado Museum.

Uinta Basin, Utah (2007-2015)

Collection of vertebrate fossils primarily in the Uinta and Duchesne River Formations.
Collaborators: Beth K.E. Townsend (Midwestern), Paul Murphey (SDNHM) and Alex Dutchak (UC)
Repository: San Diego Museum of Natural History and Utah Field House Museum of Natural History

San Juan Basin, Colorado (2003)

Collection of vertebrate fossils in the Animas and San Jose Formations in southwestern Colorado.
Collaborators: Matthew Tornow (St. Cloud) and Jin Meng (AMNH)
Repository: American Museum of Natural History.

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Fayum Depression, Egypt (2001 & 2002)

Collection of fossils in the Birket Qarun and Qasr el-Sagha Formations.

Led by: Elwyn Simons, Prithijit Chatrath (Duke) and Erik Seiffert (SUNY)

Repository: Duke University Lemur Center and Cairo Geological Museum

Bridger Basin, Wyoming (1995-1999)

Collection of fossil vertebrates in the Eocene Bridger Formation, southwestern Wyoming.

Led by: Paul Murphey (UCM) and John Alexander (AMNH)

Repository: University of Colorado and American Museum of Natural History.

Piñon Canyon, Southeastern Colorado (1997)

Recording Mesozoic fossils, including dinosaur sites in the Morrison Formation.

Led by: Emmett Evanoff (UNC)

Grants and Awards

GAANN fellowship recipient - \$93,992 (2005-2007) (U.S. Department of Education, Graduate Assistance in Areas of National Need)

Jeff Deen Memorial Fund, University of Colorado - \$1,000 (2007)

Visiting Scientist Fellowship, Field Museum of Natural History, Chicago - \$1,200 (2007)

Shell Research Grant - \$1,200 (2007)

Ogden Tweto Award, Colorado Scientific Society - \$800 (2006)

Geological Society of America - \$1,500 (2006)

William Burt Grant, University of Colorado - \$2,500 (1996 & 2005)

Estwing Award, University of Colorado (1997)

Professional Society Memberships

Society of Vertebrate Paleontology

Paleontology Society

Geological Society of America

Society for the Preservation of Natural History Collections

Utah Friends of Paleontology

Graduate Student Mentoring

Applied Environmental Geoscience Master Degree Students, Advisor

Larry Tackett 2012-2014 “*A petrographic analysis of the relationship between porosity and organic matter in the Phosphoria Formation of northeastern Utah.*”

Roger Miller 2013-2016 “*The lower Cretaceous Cedar Mountain Formation of eastern Utah: A comparison with the coeval Burro Canyon Formation, including new measured sections on the Uncompahre Uplift*”

Chris Ward 2014-2016 “*Sedimentary and stratigraphic analysis of the late Cretaceous Mesaverde Group, and the occurrence of late Cretaceous dinosaurs in northeastern Utah*”

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Cody Watkins 2014-2016 “*Hydrocarbon and CO₂ Emissions from Soil Surfaces in Uinta Basin, Utah*”

Emily Keller 2014-current “*Characterization of the Morrison Formation and Cedar Mountain Formation Contact in the Island Park Quadrangle*”

Thesis Committee Member for:

Colleen Jones (PhD) 2012-2014 “*Biogeochemistry of Selenium in Pariette Wetlands, Utah*”

David Richey (MS) 2011-2012 “*Fault zone architecture and controls of fault permeability and fluid migration pathways: An outcrop analysis of the Iron Wash fault, southeastern Utah.*”

Santi Flores (MS) 2012-2013 “*Deformation characterization at caprock/reservoir interfaces San Rafael Swell, Utah: Implications for reservoir leakage*”

Heidi Pearce (MS) 2011-2012 “*A study of the bioherms of the early Ordovician Garden City Formation and a literature review of early Ordovician organic buildups.*”

Colter Davis (MS) 2013-current “*Sequence Stratigraphy, Chemostratigraphy, and Biostratigraphy of Lower Ordovician units in northeastern and western central Utah: Regional Implications.*”

Publications (copies can be downloaded from my website <http://www.benjamin-burger.org>)

Articles in Preparation (titles subject to revision)

Burger, B.J. *Being revised:* Species level overview of the mammalian fossil record during the Late Paleocene and Eocene in the Rocky Mountain Region of North America. *PLOS One*

Burger, B.J. *Hyrachyus eximius* from the Middle Eocene lower Washakie Formation Abode Town Member of Wyoming and its bearing on the origin and early diversification of rhinoceroses.

Burger, B.J. The systematic position of the saber-toothed and horned giants of the Eocene: the Uintatheres (Order Dinocerata)

Burger, B.J. Apathy and concern over the future habitability of Earth: an introductory college assignment of forecasting CO₂ in the Earth’s Atmosphere. *Journal of Environmental Education*

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Published Refereed Articles (blind reviews by external reviewers)

Burger, B.J. and Tackett, L. 2014. The Stratigraphic Importance of the Brontothere (cf. *Diplacodon elatus*) in the Brennan Basin Member of the Duchesne River Formation of Utah. *Fossil Record* 17:69-74. DOI: 10.5194/fr-69-2014

Burger, B.J. 2013. A new species of the archaic primate *Zanycteris* from the late Paleocene of western Colorado and the phylogenetic position of the family Picrodontidae. *PeerJ* 1:e191. DOI: 10.7717/peerj.19

Burger, B.J. 2012: Northward range extension of a diminutive-sized mammal (*Ectocion parvus*) and the implication of body size change during the Paleocene-Eocene Thermal Maximum. *Palaeogeography, Palaeoclimatology, Palaeoecology* 363-364:144-150.

Burger, B.J. 2010: The skull of the Eocene Primate *Omomys carteri* from western North America. *Paleontological Contributions*, vol. 2 p. 1-19.

Burger, B.J. and Honey, J. 2008: Plesiadapidae (Mammalia, Primates) from the Late Paleocene Fort Union Formation of the Piceance Creek Basin, Colorado. *Journal of Vertebrate Paleontology* 28(3):816-825.

Burger, B.J. 2007: A new late Paleocene vertebrate fauna from the Ohio Creek Formation of western Colorado. *The Mountain Geologist*, vol 44, No. 3 pp. 41-51.

Peer-reviewed Book Chapters

Burger, B.J. 2016: Course Delivery Methods for Effective Distance Science Education: A Case Study of Taking an Introductory Geology Class Online. in Blackstock, Alan, and Straight, Nathan (eds.) *Connected Classrooms: Interdisciplinary Approaches to Distance Teaching*. Routledge. Research in Education Series. New York: Routledge/Taylor & Francis.

Burger, B.J., 2015: Carbon Isotope Stratigraphy of the Late Middle Eocene Duchesne River Formation in the Uinta Basin of Northeastern Utah, in Vanden Berg, M.D., Ressetar, R., and Birgenheier, L.P., (eds.) *Geology of Utah's Uinta Basin and Uinta Mountains*: Utah Geological Association Publication 44, p. 109–118.

Alexander, J.P. and **Burger, B.J.** 2001: Stratigraphy and Taphonomy of Grizzly Buttes, Bridger Formation, Middle Eocene of Wyoming in G. F. Gunnell (ed.) *Eocene Biodiversity*. Kluwer Academic/Plenum Publishing, New York. pp. 165-196.

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Dissertation and Thesis

Burger, B.J. 2009. Mammalian faunal change across the Paleocene-Eocene boundary in the Piceance Creek Basin, western Colorado. Unpublished PhD dissertation, University of Colorado, Boulder. pp. 834.

Burger, B.J. 1999: The systematics and phylogeny of the fossil Hyopsodontidae (Mammalia, "Condylarthra"). Unpublished masters thesis, State University of New York, Stony Brook, New York. pp. 66.

Pre Prints Scholarly Publications (not peer-reviewed)

Burger, B.J. and Ward, C. 2016. On the occurrence of fossil conifers with affinities to the European *Geinitzia* in the late Cretaceous (Campanian) Mesa Verde Group, Williams Fork Formation of northeastern Utah, U.S.A. PeerJ Preprints 1-9.
<https://doi.org/10.7287/peerj.preprints.1862v1>

Book Reviews (not peer-reviewed)

Burger, B.J. 2012. A review of Prothero, D.R. 2009. Greenhouse of the Dinosaurs: Evolution, Extinction and the Future of our Planet. Columbia University Press, New York, NY. 288 pp. Priscum Summer edition, p. 31.

Meeting Abstracts and Invited Talks

Burger, B.J. 2016: *Hyrachyus eximius* from the Middle Eocene lower Washakie Formation Abode Town Member of Wyoming and its bearing on the origin and early diversification of rhinoceroses. *Presented at the Utah Friends of Paleontology annual meeting in Moab, Utah*

Burger, B.J. 2015: The systematic position of the saber-toothed and horned giants of the Eocene: the Uintatheres (Order Dinocerata). *Presented at the Society of Vertebrate Paleontology meetings Dallas, Texas*

Burger, B.J. 2014: S/G ratios as an assessment of mammalian community response to climate change during the Paleogene in the southern Rocky Mountains. Presented at the Geological Society of America annual meetings in Vancouver, British Columbia. Topic Session 204. Fossil Mammalian Communities across Periods of Pronounced Climate Change. Paper No. 21-14.

Burger, B.J. 2014: The saber-toothed giants of the Eocene: The Uintatheres *Presented at the Utah Friends of Paleontology annual meeting in Vernal, Utah.*

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- Burger, B.J.** 2013: Mammal species durations in the fossil record: answering the question, which species has the longest duration in the fossil record? 125th annual meeting, Geological Society of America Abstracts Paper No. 30-12
- Burger, B.J.** 2011: Diversity, Extinction, and Gaps: An overview of the mammalian record during the late Paleocene and Eocene in the Rocky Mountain Region of North America. *Journal of Vertebrate Paleontology* November meeting abstracts.
- Burger, B.J.** 2011: Fossil mammals from the late Eocene Brennan Basin Member of the Duchesne River Formation in Utah. Rocky Mountain 63rd Annual and Cordilleran 107th joint meeting, *Geological Society of America* Abstracts 43:78
- Burger, B.J.** and Murphey, P.C. 2010: Is there a mammalian faunal turnover associated with the MECO global warming event in the Duchesne River Formation in northeastern Utah? Evaluation of new fossil discoveries from the Brennan Basin Member. *Journal of Vertebrate Paleontology* October meeting abstracts 67A.
- Burger, B.J.** 2010: Fossil primates of the early Cenozoic in North America: A piece of our family tree preserved in the badlands of our backyards. *Presented at the Utah Friends of Paleontology annual meeting in Vernal, Utah.*
- Burger, B.J.** 2008: Extinction, migration, and the effects of global warming on fossil mammals across the Paleocene-Eocene boundary in western Colorado, U.S.A. *Journal of Vertebrate Paleontology* 28(3) supplement 58A.
- Burger, B.J.** 2008: Evolution's tempo and mode during the Eocene Epoch: comparison of two long contemporaneous records of the fossil mammal *Hyopsodus* in the American West; pp. 41-58, in M. Connely (ed.) *The Eocene Epic- Life, Death and Conquest in the Early Tertiary* the 14th Annual Symposium on Paleontology and Geology at the Tate Museum, Casper College, Casper Wyoming p. 101.
- Burger, B.J.** 2007: Discovery of the carbon isotope excursion (CIE) at the Paleocene-Eocene boundary in the Piceance Creek Basin, western Colorado. *Geological Society of America*. Paper No. 70-2
- Burger, B.J.** 2006: A new late Paleocene vertebrate fauna from the Ohio Creek Conglomerate of western Colorado. *Journal of Vertebrate Paleontology* 26(3) supplement.
- Burger, B.J.**, Eberle, J., and Honey, J. 2005: Mammalian faunal change in the Paleocene-Eocene boundary spanning DeBeque Formation, Northern Piceance Creek Basin, western Colorado: Preliminary study of fossil ungulates. *Journal of Vertebrate Paleontology* 25(3) supplement: 41A.
- Burger, B.J.** 2004: New fossil vertebrates from the Tiffany Member of the Late Paleocene Animas Formation of Southwestern Colorado, and the P/E boundary on the margin of the San Juan Basin. *Journal of Vertebrate Paleontology* 24(3) supplement: 42A.
- Burger, B.J.** 2003: Stacking cladograms: a new method to model temporal and sister-group relationships of fossils. *Journal of Vertebrate Paleontology*. 23(3) supplement.
- Burger, B.J.** 2001: The humeral morphology of the "Condylarthra" and its implications for the evolution of cursorial mammals. *Journal of Vertebrate Paleontology* 21(3) supplement: 37A.
- Burger, B.J.** 2000: The next generation collection database at the American Museum of Natural History. *Journal of Vertebrate Paleontology* 20(3) supplement.

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- Burger, B.J.** 1999: The skeletal anatomy of *Hyopsodus* and its bearing on the origin of modern ungulate mammals. *Journal of Vertebrate Paleontology*. 19(3) supplement 34A.
- Burger, B.J.** and Alexander, J.P. 1997: A new skeleton of *Hyopsodus* from the Eocene of Wyoming *Journal of Vertebrate Paleontology* 18(3) supplement: 30A.
- Burger, B.J.** 1997: Detailed Stratigraphy of the Bridger B fossil beds of East Grizzly Buttes. *Geological Society of America* 29(2) p.5.

Paleontology Technical Reports (not peer reviewed abbreviated list)

- Burger, B.J.**, Murphey, P.C., Strauss, J.J., and Temme, T. 2010: Paleontology resources mitigation monitoring report for Berry Petroleum Oil and Gas infrastructure construction on Ashley National Forest. Prepared for the Ashley National Forest United States Department of Agriculture. SWCA #UT10-14635-31 p. 1-31.
- Burger, B.J.** and Murphey, P.C. 2010: Paleontological assessment for State Bridge Lodge Eagle County, Colorado. Prepared for the Bureau of Land Management Kremmling Field Office. SWCA #CO10-16841-03.
- Burger, B.J.**, Strauss, J.J. and Murphey, P.C. 2010: Paleontological Assessment for the Questar Main Line 103 Pipeline Upgrade, Uinta County. Prepared for Uintah County, Bureau of Land Management, and State of Utah School and Institutional Trust Lands Administration. SWCA #UT09-16018-97 p. 1-39.
- Murphey, P.C., Strauss, J., **Burger, B.J.**, Imhof, M. and Knauss, G. 2009: Final Report: Paleontological Block Surveys of Ute Tribal lands for Newfield Production Company. Prepared for the Ute and Ouray Indian Tribe. SWCA #UT09-14273-85 p. 1-29, Appendix A, B, & C.
- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Assessment for The Alternate Truck Route Study, Uintah County, Utah. Prepared for Uintah County, Bureau of Land Management, and State of Utah School and Institutional Trust Lands Administration. SWCA #UT09-14870-84 p. 1-52.
- Burger, B.J.**, Murphey, P.C., Strauss, J., and Imhof, M. 2009: Paleontological Resources Monitoring and Mitigation Report for Utah Department of Transportation US-6, MP200 Bridge Replacement. Prepared for the Utah Department of Transportation. SWCA #UT09-14501-83 p. 1-71.
- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Assessment for Questar Gas/Pipeline Company Clay Basin Water Storage Tank. Prepared for Bureau of Land Management, Vernal Field Office. SWCA # UT09-15881-81 p. 1-9.
- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Assessment for Summit Gas Gathering, LLC. Riverbend Dehydration facility at RBU 6-15E. Prepared for Bureau of Land Management, Vernal Field Office. SWCA #UT09-15814-79 p. 1-12.
- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Assessment for XTO Energy's Tap #5 Booster Site. Prepared for Bureau of Land Management, Vernal Field Office. SWCA #UT09-15669-78 p. 1-13.
- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Assessment for Newfield Production Company Sand Wash Water Injection Pipeline. Prepared for Bureau of Land Management, Vernal Field Office. SWCA # UT09-14273-73 p. 1-10.

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- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Assessment for Newfield Production Company Boundary Pipeline. Prepared for Bureau of Land Management, Vernal Field Office. SWCA # UT09-14273-70 p. 1-36.
- Burger, B.J.**, and Murphey, P.C. 2009: Paleontological Monitoring Report for Construction of Newfield Pipeline in the Gilsonite and Blackjack Units. Prepared for Bureau of Land Management, Vernal Field Office. SWCA # UT09- 14273-69 p. 1-11.
- Burger, B.J.**, Strauss, J. and Murphey, P.C. 2009: Paleontological Assessment for PacifiCorp / Rocky Mountain Power Line UTU 84810/ Myton Oil. Prepared for Bureau of Land Management, Vernal Field Office. SWCA # UT09-15481-68 p.1-21.
- Burger, B.J.** 2008: Paleontological Technical Report: Interstate 76 improvements between the towns of Fort Morgan and Brush, Morgan County, Colorado. Prepared for Smith Environmental and Engineering. p. 1-11.

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Service and Outreach

May 2016-August 2016—YouTube Video Educational Series *The Rocks of Utah*

April 2016—Presentation on climate change at Terra Academy (K-12) Vernal, Utah Environmental Science class

June-July 2014— Uintah Undergraduate Research Institute mentoring program

May-June 2014— Hosted the Utah Friends of Paleontology Annual Meeting and Fieldtrip

April 2014— Discovery Elementary Geology Presentation to 4th Graders

January 2014 – Uintah County Middle School tours of Geology Lab

June-July 2013- Uintah Undergraduate Research Institute mentoring program

April 2013- Uintah County Gifted and Talented Program at Dinosaur National Park

April 2013- Uintah Basin Research Conference presenter

February 2013 – AGI geology fieldstrip workshop

January 2013 – Uintah County Middle School tours of Geology Lab

November 2012—Access Friday Utah, Utah Public Radio program on my research in the Uinta Basin

October 2012 – Uintah County Middle School tours of Geology Lab

August 2012- NSF Messenger Science Communication Workshop in Salt Lake City

May 2012 – Uintah County Summer Science Camp

September 2011— KVEL 920 AM Radio Talk Show Interview

