

# JOHN L. MUNTEAN

Director, Ralph Roberts Center for Research in Economic Geology and Arthur Brant Chair in Exploration Geology  
Nevada Bureau of Mines and Geology  
University of Nevada Reno  
Reno, Nevada 89557-0178, U.S.A.  
Phone: (775) 682-8748  
Email: munteanj@unr.edu

## EDUCATION

**Stanford University**, Department of Geological and Environmental Sciences, Stanford, CA  
Doctor of Philosophy in Geology, 1998, Advisor: Marco Einaudi  
Dissertation: "Magmatic-Hydrothermal Gold Deposits of the Maricunga Belt, Northern Chile"  
Awards/Honors: STA/NSF Post-Doctoral Fellowship, Japanese Geological Survey, 1998 (declined)

**University of Michigan**, Department of Geological Sciences, Ann Arbor, MI  
Master of Science in Geology, 1989, Advisor: Stephen Kesler  
Thesis: "Evolution of the Monte Negro Acid Sulfate Gold-Silver Deposit, Pueblo Viejo, Dominican Republic: Important Factors in Grade Development"  
Awards/Honors: National Science Foundation Graduate Fellowship, 1987-1989  
University of Michigan Regent's Fellowship, 1986-1987

**Purdue University**, Department of Earth and Atmospheric Sciences, West Lafayette, IN  
Bachelor of Science in Geology with Honors, 1986, Advisor: Robert Loucks  
Senior Thesis: "Gold Mineralization in Proterozoic Shear Zones, Medicine Bow Mountains, Wyoming"  
Awards/Honors: Phi Beta Kappa, 1986  
Nominated for Senior of the Year, School of Science, 1986  
W.A. Tarr Award (Sigma Gamma Epsilon - Geoscience Honors Society), 1985  
Golden Key National Honor Society, 1985  
School of Science Professorial Assistantship, 1982-1984

## PROFESSIONAL EMPLOYMENT

**Director of the Ralph Roberts Center for Research in Economic Geology/Arthur Brant Chair in Exploration Geology/Associate Professor**, Nevada Bureau of Mines & Geology, University of Nevada Reno **2005-present**  
Supervisors: James Faulds, Jonathan Price

- 2014-present, Arthur Brant Chair in Exploration Geology
- 2012-present, Director of the Ralph J. Roberts Center for Research in Economic Geology
- 2011, Granted tenure and promoted to Associate Professor
- Conducting research on ore deposits, mineral resources, and other aspects of the geology of Nevada.
- Current focus is on Carlin-type gold deposits in Nevada.

**Senior Geologist**, Placer Dome Exploration Inc., Reno, NV **1999-2004**  
Supervisors: Greg Hall, Andrew Jackson, William Howald

- Led an in-house, team-based study that developed new tectonic, geologic, genetic, and exploration models for Carlin-type gold deposits in Nevada.
- Supported Placer Dome's mine and generative exploration efforts worldwide as a member of the Technical Specialist Group.
- Carried out exploration projects for Carlin-type gold deposits in north-central Nevada.

- Senior Project Geologist**, Homestake Mining Co., Sparks, NV, Supervisor: Ronald Parratt **1998-1999**
- Conducted exploration program in the Eureka district in Nevada.
- Geologist**, Amax Gold Inc., Englewood, CO, Supervisor: Neil Muncaster **1993-1995**
- Mapped 3 porphyry gold-(copper) deposits as part of my dissertation research in the high Andes of northern Chile.
- Geologist**, Santa Fe Pacific Mining Inc., Reno, NV **1989-1993**  
Supervisors: Wade Hodges, Ronald Parratt, Kendall Sageser
- Managed and performed all phases of precious metal exploration in Nevada including regional reconnaissance and detailed prospect evaluation.
- Associate Geologist**, Atlas Precious Metals, Inc., Sparks, NV, Supervisor: Frank Fenne **1988**
- Worked on drill programs in Nevada and Oregon; mapped and sampled prospects.
- Geologist**, United States Geological Survey, Menlo Park, CA, Supervisor: James Rytuba **1986**
- Summer internship awarded by National Association of Geoscience Teachers and U.S.G.S. based on outstanding performance at Indiana University geologic field camp.
  - Mapped and assessed mineral potential of wilderness study areas in southeastern Oregon and northern Nevada.

## PUBLICATIONS

### Refereed Publications

#### *Articles in peer-reviewed international journals/monographs:*

- Kirk, J. D., Ruiz, J., Kesler, S. E., Simon, A., Muntean, J. L., 2014, Re-Os age of the Pueblo Viejo epithermal deposit, Dominican Republic: *Economic Geology*, v. 109, p. 503-512.
- Long, S. P., Henry, C. D., Muntean, J. L., Edmondo, G. P., and Cassel, E. J., 2014, Early Cretaceous construction of a structural culmination, Eureka, Nevada, U.S.A.: Implications for out-of-sequence deformation in the Sevier hinterland: *Geosphere*, v. 10, p. 564-584.
- Arehart, G. B., Ressel, M., Carne, R., Muntean, J., 2013, A comparison of Carlin-type deposits in Nevada and Yukon: *in* Colpron, M., Bissig, T., Rusk, B. G., and Thompson, J. F. H. (eds.), *Society of Economic Geologists, Special Publication 17: Tectonics, Metallogeny, and Discovery: The North American Cordillera and Similar Accretionary Settings*, p. 389-401.
- Cline, J. S., Muntean, J. L., Gu, X., and Xia, Y., 2013, A comparison of Carlin-type gold deposits: Guizhou Province, Golden Triangle, southwest China, and northern Nevada, USA: *Earth Science Frontiers*, v. 20, p. 1-18.
- Muntean, J. L., Cline, J. S., Simon, A. C., and Longo, A. A., 2011, Magmatic-hydrothermal origin of Nevada's Carlin-type gold deposits: *Nature Geoscience*, v. 4, p. 122-127.
- Muntean, J. L. and Taufen, P. M., 2011, Geochemical exploration for gold through transported alluvial cover in Nevada: Examples from the Cortez Mine: *Economic Geology*, v. 106, p. 809-833.
- Arribas, A., Arribas, I., Grenville Draper, G., Hall, C., Kesler, S.E., McEwen, C., and Muntean, J. L., 2011, <sup>40</sup>Ar/<sup>39</sup>Ar dating of alunite from the Pueblo Viejo gold-silver district, Dominican Republic: *Economic Geology*, v. 106, p. 1059-1069. (*authors in alphabetical order*)
- Muntean, J. L., Coward, M. P., and Tarnocai, C. A., 2007, Reactivated Palaeozoic normal faults: controls on the formation of Carlin-type gold deposits in north-central Nevada: *in* Reis, A. C., Butler, R. W. H. and Graham, R. H. (eds.) "Deformation of the Continental Crust – The Legacy of Mike Coward," *Geological Society, London, Special Publications*, v. 272, p. 573-589.
- Muntean, J., Hall, G., Kesler, S., Mueller, A., O'Brien, D. and Russell, N., 2007, Pueblo Viejo high-sulfidation epithermal gold-silver deposit, Dominican Republic: A new model of formation beneath barren limestone cover – a discussion: *Economic Geology*, v. 102, p. 755-760.
- Cline, J. S., Hofstra, A. H., Muntean, J. L., Tosdal, R. M., and Hickey, K. A., 2005, Carlin-type gold deposits in Nevada, USA: Critical Geologic Characteristics and Viable Models: *in* Hedenquist, J. W., Thompson, J. H. F.,

- Goldfarb, R. J. and Richards, J. P. (eds.), Economic Geology One Hundredth Anniversary Volume, Society of Economic Geologists, Littleton, Colorado, p. 451-484.
- Muntean, J. L. and Einaudi, M. T., 2001, Porphyry-epithermal transition: Maricunga belt, northern Chile: *Economic Geology*, v. 96, p. 743-772.
- Muntean, J. L. and Einaudi, M. T., 2000, Porphyry gold deposits of the Refugio district, Maricunga belt, northern Chile: *Economic Geology*, v. 95, p. 1445-1472.
- Venneman, T. W., Muntean, J. L., Kesler, S. E., and O'Neil, J. R., Valley, J. W., Russell, N., 1993, Stable isotope evidence for magmatic fluids in the Pueblo Viejo epithermal acid-sulfate Au-Ag deposit, Dominican Republic: *Economic Geology*, v. 88, p. 55-71.
- Muntean, J. L., Kesler, S. E., Russell, N., and Polanco, J., 1990, Evolution of the Monte Negro acid-sulfate Au-Ag deposit, Pueblo Viejo, Dominican Republic: Important factors in grade development: *Economic Geology*, v. 85, p. 1738-1758.

#### ***Other refereed articles***

- Cramer, T. and Muntean, J., 2015, Application of remote sensing in mineral assessments of arid regions: Desert National Wildlife Range, Nevada: *in* Pennell, W. M. and Garside, L. J., eds., *New Concepts and Discoveries: Geological Society of Nevada Symposium Proceedings, May 2015*, Sparks, Nevada, p. 861-884.
- DiFiori, R. V., Long, S. P., Muntean, J. L., Edmondo, G. P., 2015, Structural analysis of gold mineralization in the southern Eureka mining district, Eureka County, Nevada: A predictive structural setting for Carlin-type mineralization: *in* Pennell, W. M. and Garside, L. J., eds., *New Concepts and Discoveries: Geological Society of Nevada Symposium Proceedings, May 2015*, Sparks, Nevada, p. 885-903.
- Muntean, J. L. Cline, J. S., and Simon, A. C., 2011, The Carlin gold system in Nevada: a perfect storm resulting from ideal crustal architecture, metasomatized lithospheric mantle, and tectonic trigger: *in* Barra, F., Reich, M., Campos, E. and Tornos, F. (eds.), *Let's Talk Ore Deposits*, Proceedings of the Eleventh Biennial Meeting of the Society for Geology Applied to Mineral Deposits, Antofagasta, Chile, p. 100-102. (***Invited Keynote Lecture***)
- Patterson, L. M. and Muntean, J. L., 2011, Multi-element geochemistry across a Carlin-type gold district: Jerritt Canyon, Nevada: *in* Steininger, R. C. and Pennell, W. M. (eds.), *Great Basin Evolution and Metallogeny: Geological Society of Nevada 2010 Symposium Proceedings*, Reno, p. 1119-1152. (***Best Student Paper Award, 2010 GSN Symposium***)
- Cassinerio, M. D. and Muntean, J. L., 2011, Patterns of lithology, structure, alteration and trace elements around high-grade ore zones at the Turquoise Ridge gold deposit, Getchell district, Nevada: *in* Steininger, R. C. and Pennell, W. M. (eds.), *Great Basin Evolution and Metallogeny: Geological Society of Nevada 2010 Symposium Proceedings*, Reno, p. 949-978. (***Second Place Student Paper Award, 2010 GSN Symposium***)
- Muntean, J. L., Cassinerio, M. D., Arehart, G. B. Cline, J. S., and Longo, A. A., 2009, Fluid pathways at the Turquoise Ridge Carlin-type gold deposit, Getchell district, Nevada: *in* Williams, P. J. (ed.), *Smart Science for Exploration and Mining*, Proceedings of the Tenth Biennial Meeting of the Society for Geology Applied to Mineral Deposits, Townsville, Australia, p. 251-253. (***Invited Keynote Lecture***)
- Longo, A. A., Cline, J. S., and Muntean, J. L., 2009, Using pyrite to track evolving fluid pathways and chemistry in Carlin-type deposits: *in* Williams, P. J. (ed.), *Smart Science for Exploration and Mining*, Proceedings of the Tenth Biennial Meeting of the Society for Geology Applied to Mineral Deposits, Townsville, Australia, p. 242-244.
- Price, J. G., and Muntean, J. L., 2007, Why there is so much gold in Nevada: *in* Andrew, C. J. (ed.), *Digging Deeper*, Proceedings of the Ninth Biennial Meeting of the Society for Geology Applied to Mineral Deposits, Dublin, Ireland, p. 1247-1250.

#### ***Refereed Nevada Bureau of Mines and Geology Reports***

- Muntean, J. L., 2011, Metals, *in* The Nevada mineral industry 2010: Nevada Bureau of Mines and Geology Special Publication MI-2010, p. 20-48.
- Muntean, J. L., 2011, Major precious metal deposits, *in* The Nevada mineral industry 2010: Nevada Bureau of Mines and Geology Special Publication MI-2010, p. 49-84.
- Muntean, J. L., 2011, Other metallic deposits, *in* The Nevada mineral industry 2010: Nevada Bureau of Mines and Geology Special Publication MI-2010, p. 85-87.
- Muntean, J. L., 2010, Metals, *in* The Nevada mineral industry 2009: Nevada Bureau of Mines and Geology Special Publication MI-2009, p. 27-67.

- Muntean, J. L., 2010, Major precious metal deposits, *in* The Nevada mineral industry 2009: Nevada Bureau of Mines and Geology Special Publication MI-2009, p. 68-100.
- Muntean, J. L., 2010, Other metallic deposits, *in* The Nevada mineral industry 2009: Nevada Bureau of Mines and Geology Special Publication MI-2009, p. 101-102.
- Muntean, J. L., 2009, Metals, *in* The Nevada mineral industry 2008: Nevada Bureau of Mines and Geology Special Publication MI-2008, p. 25-81.
- Muntean, J. L., 2009, Major precious metal deposits, *in* The Nevada mineral industry 2008: Nevada Bureau of Mines and Geology Special Publication MI-2008, p.82-112.
- Muntean, J. L., 2009, Other metallic deposits, *in* The Nevada mineral industry 2008: Nevada Bureau of Mines and Geology Special Publication MI-2008, p. 113-114.
- Muntean, J. L., 2008, Metals, *in* The Nevada mineral industry 2007: Nevada Bureau of Mines and Geology Special Publication MI-2007, p. 27-87.
- Muntean, J. L., 2008, Major precious metal deposits, *in* The Nevada mineral industry 2007: Nevada Bureau of Mines and Geology Special Publication MI-2007, p.88-116.
- Muntean, J. L., 2008, Other metallic deposits, *in* The Nevada mineral industry 2007: Nevada Bureau of Mines and Geology Special Publication MI-2007, p. 117-118.
- Muntean, J. L., 2007, Metals, *in* The Nevada mineral industry 2006: Nevada Bureau of Mines and Geology Special Publication MI-2007, p. 14-37.
- Muntean, J. L., 2007, Major precious metal deposits, *in* The Nevada mineral industry 2006: Nevada Bureau of Mines and Geology Special Publication MI-2006, p. 38-62.
- Muntean, J. L., 2006, Metals, *in* The Nevada mineral industry 2005: Nevada Bureau of Mines and Geology Special Publication MI-2005, p. 13-28.
- Muntean, J. L., 2006, Major precious metal deposits, *in* The Nevada mineral industry 2005: Nevada Bureau of Mines and Geology Special Publication MI-2005, p. 29-51.

#### ***Refereed maps***

- Long, S. P., Henry, C. D., Muntean, J. L., Edmondo, G. P., and Thomas, R. D., 2014, Geologic map of the southern part of the Eureka mining district, and surrounding areas of the Fish Creek Range, Mountain Boy Range, and Diamond Mountains, Eureka and White Pine Counties, Nevada: Nevada Bureau of Mines and Geology Map 183, 1:24,000-scale, 2 plates, 36 p.
- Davis, D. A., Tingley, J. V., and Muntean, J. L., 2006, Gold and silver resources of Nevada: Nevada Bureau of Mines and Geology Map 149.

#### **Non-refereed Publications**

##### ***Nevada Bureau of Mines and Geology Reports***

- Muntean, J. L., 2015, Overview, *in* The Nevada mineral industry 2013: Nevada Bureau of Mines and Geology Special Publication MI-2013, p. 3-12.
- Davis, D. A., and Muntean, J. L., 2015, Metals, *in* The Nevada mineral industry 2013: Nevada Bureau of Mines and Geology Special Publication MI-2013, p. 13-39.
- Davis, D. A., and Muntean, J. L., 2015, Major precious metal deposits, *in* The Nevada mineral industry 2013: Nevada Bureau of Mines and Geology Special Publication MI-2013, p. 40-91.
- Davis, D. A., and Muntean, J. L., 2015, Other metallic deposits, *in* The Nevada mineral industry 2013: Nevada Bureau of Mines and Geology Special Publication MI-2013, p. 92-99.
- Muntean, J., Hinz, N., Cramer, T., Davis, D., Dering, G., and Sladek, C., 2014, An updated mineral and energy resource assessment of the Desert National Wildlife Range Clark and Lincoln Counties, Nevada: Nevada Bureau of Mines and Geology Open-File Report 14-3, 162 p.
- Muntean, J. L., 2014, Overview, *in* The Nevada mineral industry 2012: Nevada Bureau of Mines and Geology Special Publication MI-2012, p. 3-12.
- Davis, D. A., and Muntean, J. L., 2014, Metals, *in* The Nevada mineral industry 2012: Nevada Bureau of Mines and Geology Special Publication MI-2012, p. 13-52.
- Davis, D. A., and Muntean, J. L., 2014, Major precious metal deposits, *in* The Nevada mineral industry 2012: Nevada Bureau of Mines and Geology Special Publication MI-2012, p. 53-101.

- Davis, D. A., and Muntean, J. L., 2014, Other metallic deposits, *in* The Nevada mineral industry 2012: Nevada Bureau of Mines and Geology Special Publication MI-2012, p. 101-109.
- Muntean, J.L., Garside, L.J., and Davis, D.A., 2013, Nevada mineral and energy resource exploration survey 2011: Nevada Bureau of Mines and Geology Exploration Survey 2011, 22 p.
- Muntean, J. L., 2013, Overview, *in* The Nevada mineral industry 2011: Nevada Bureau of Mines and Geology Special Publication MI-2011, p. 3-13.
- Davis, D. A., and Muntean, J. L., 2013, Metals, *in* The Nevada mineral industry 2011: Nevada Bureau of Mines and Geology Special Publication MI-2011, p. 14-52.
- Davis, D. A., and Muntean, J. L., 2013, Major precious metal deposits, *in* The Nevada mineral industry 2011: Nevada Bureau of Mines and Geology Special Publication MI-2011, p. 53-96.
- Davis, D. A., and Muntean, J. L., 2013, Other metallic deposits, *in* The Nevada mineral industry 2011: Nevada Bureau of Mines and Geology Special Publication MI-2011, p. 97-102.
- Muntean, J. L., Henry, C. D., Castor, S. B., Ludington, S. D., John, D. A., Wintzer, N., Hanson, A. D., 2009, Mineral and Hydrocarbon Resources and Potential, Northern Nye County, Nevada: Nevada Bureau of Mines and Geology Open File Report 09-14. ([www.nbmng.unr.edu/dox/NWMAupdate09.pdf](http://www.nbmng.unr.edu/dox/NWMAupdate09.pdf)) (*poster*)
- Price, J. G., Coolbaugh, M. F., Davis, D. D., Garside, L. J., Hastings, J. T., Henry, C. D., Hess, R. H., Hursh, J. P., LaPointe, D. D., Muntean, J. L., Shevenell, L. A., and Zehner, R. E., 2008, Mineral and Energy Resources and Potential in Mineral, Esmeralda, Lyon, and Douglas Counties, Nevada: Nevada Bureau of Mines and Geology Open File Report 08-02, [www.nbmng.unr.edu/dox/of082.pdf](http://www.nbmng.unr.edu/dox/of082.pdf). (*poster*)

### **Maps**

- Muntean, J. L., Hill, T. J., Hannink, R. L., Smith, M., Raabe, K., and Shabestari, P., 2015, Preliminary geologic map of the South Kinsley Mountains, Elko and White Pine counties, Nevada: Nevada Bureau of Mines and Geology Open-File Report 15-9, scale 1:12,000
- Muntean, J. L. and Davis, D. A., 2014, Nevada active mines and energy producers: Nevada Bureau of Mines and Geology Open-File Report 14-1, scale 1:1,000,000.
- Di Fiori, R. V., Long, S. P., Edmondo, G. P., and Muntean, J. L., 2014, Preliminary geologic and alteration maps of Lookout Mountain, Ratto Ridge, and Rocky Canyon, southern Eureka mining district, Eureka County, Nevada: Nevada Bureau of Mines and Geology Open-File Report 14-8, 1:10,000-scale, 2 plates.
- Long, S. P., Henry, C. D., Muntean, J. L., Edmondo, G. P., and Thomas, R. D., 2012, Preliminary geologic map of the southern Eureka mining district, Eureka and White Pine Counties, Nevada: Nevada Bureau of Mines and Geology Open File Report 12-06, scale 1:24,000
- Muntean, J. L. and Henry, C. D., 2007, Preliminary geologic map of the Jerritt Canyon mining district: Nevada Bureau of Mines and Geology Open File Report 07-03, scale 1:24,000.
- Muntean, J. L. and Henry, C. D., 2006, Preliminary geologic map of the north half of the Jerritt Canyon mining district: Nevada Bureau of Mines and Geology Open File Report 06-017, scale 1:24,000.

### **Field trip guides**

- Muntean, J. L., Cassinerio, M. D., Arehart, G. B. Cline, J. S., and Longo, A. A., 2009, Fluid pathways at the Turquoise Ridge Carlin-type gold deposit, Getchell district, Nevada: *in* Ressel, M. W. (ed.), *Diverse gold deposits of the Osgood Mountains and Humboldt Range, north-central Nevada*, Geological Society of Nevada Special Publication no. 49, p. 67-69. (*Invited lecture*)
- Longo, A. A., Cline, J. S., and Muntean, J. L., 2009, Using pyrite to track evolving fluid pathways and chemistry in Carlin-type deposits: *in* Ressel, M. W. (ed.), *Diverse gold deposits of the Osgood Mountains and Humboldt Range, north-central Nevada*, Geological Society of Nevada Special Publication no. 49, p. 63-65.
- Marlowe, K., Wood, K. and Muntean, J., 2007, The Getchell mine complex: Seven decades of mining and geology: *in* Johnston, M. K. (ed.), *Faults, folds, and mineral belts: regional structural systems, gold mineralization, and exploration potential in the Great Basin*, Geological Society of Nevada Special Publication No. 46, p. 127-134.
- Muntean, J. L., 2006, Geology of the Bunce Area, Trinity Range, Pershing County Nevada: Geological Society of Nevada Special Publication No. 42, Geology and Mineral Resources of the Trinity, Seven Troughs, and Kamma Ranges, West-Central Nevada, p. 89-95.
- John, D., and Muntean, J. L., 2006, Summary of characteristics of Tertiary metallic mineral deposits in the Lovelock area, northwestern Nevada: Geological Society of Nevada Special Publication No. 42, Geology and Mineral Resources of the Trinity, Seven Troughs, and Kamma Ranges, West-Central Nevada, p. 60-72.

Muntean, J. L. and Hedenquist, J. W., 2004, Gold-silver mineralization in the Maricunga Belt: *in* Mpodozis, C., Vivallo, W. F. (eds.), Field trip Guide A4, Cenozoic arcs and mineral deposits of the Southern Central Andes (El Salvador-Maricunga-Ojos del Salado region), IAVCEI General Assembly, Pucon Chile, p. 17-21.

### **Book reviews**

Muntean, J. L., 1997, *review of* "Epithermal Gold Deposits: Styles, Characteristics, and Exploration." The Society of Resource Geology Special Publication Number 1., J.W. Hedenquist, E. Izawa, A. Arribas, and N.C. White.: Economic Geology, v. 92, p. 264.

### **Other articles and open-file reports**

Ludington, S., John, D. A., Muntean, J. L., Hanson, A. D. Castor, S. B., Henry, C. D., Wintzer, N., Cline, J. S., Simon, A. C., 2009, Mineral Resource Assessment of Northern Nye County, Nevada – a Progress Report, United States Geological Survey Open File Report 2009-1271, p. 1-13 p. (<http://pubs.usgs.gov/of/2009/1271>)

Muntean, J. L. and Davis, D. A., 2008, Nevada: Annual mining review, state activities: Mining Engineering, v. 60, p.103-108.

Muntean, J. L. and Castor, S. B., 2007, Nevada: Annual mining review, state activities: Mining Engineering, v. 59, p. 97-101.

Muntean, J. L., 2006, The rush to uncover gold's origin, Geotimes, v. 51, p. 24-27.

Muntean, J. L. and Castor, S. B., 2006, Nevada: Annual mining review, state activities: Mining Engineering, v. 58, p. 100-103.

Muntean, J. L., 2005, foreword to: "Controversies on the origin of world –class gold deposits, Part II: Witwatersrand gold deposits: Society of Economic Geologists Newsletter, n. 60, p. 7, 12-19.

Muntean J. L., 2004, foreword to: "Controversies on the origin of world –class gold deposits, Part I: Carlin-type gold deposits in Nevada: Society of Economic Geologists Newsletter, n. 59, p. 1, 11-18.

Cline, J. S., Hofstra, A. H., Muntean, J. L., Tosdal, R. A., and Hickey, K. M., 2004, Carlin-type gold deposits in Nevada, USA: *in* Cooke, D., ed., *Ore Deposit Models*, 24 Carat Gold Workshop, University of Tasmania, Hobart, Tasmania, Australia, CODES Special Publication 5, p. 133-139.

Wijns, C., Hall, G., Groves, D., and Muntean, J., 2004, Compressional tectonics of the Carlin gold trend: *in* Muhling, J. and Goldfarb, R. [eds.], *SEG 2004: Predictive Mineral Discovery Under Cover*, Extended Abstracts Volume, Society of Economic Geologists/University of Western Australia Center for Global Metallogeny, Perth, Western Australia, p. 292-295.

Muntean, J. L., Tarnocai, C. A., Coward, M., Rouby, D., and Jackson A., 2001, Styles and restorations of Tertiary extension in north-central Nevada: *in* Shaddrick, D. R., Zbinden, E. A., Mathewson, D. C., and Prenn, C. (eds.), *Regional tectonics and structural control of ore: the major gold trends of northern Nevada*, Geological Society of Nevada Special Publication no. 33, p. 55-69. (*Invited lecture*)

Muntean, J. L., 1998, Porphyry gold deposits of the Andean Cordillera: *in* Lefebure, D.V. (Coordinator): *Metallogeny of Volcanic Arcs*, B.C. Geological Survey, Short Course Notes, Open File 1998-5, p. Q1-14. (*Invited lecture*)

Muntean, J. L., 1992, Pueblo Viejo, Dominican Republic: An epithermal, acid-sulfate gold deposit associated with a maar-diatreme complex: *in* Proceedings from workshop on Gold Geology of Maar Diatremes, Randol at Minexpo '92, p. 63-67. (*Invited lecture*)

### **Contract reports**

Muntean, J., 2015, Exploration for Carlin-type gold deposits underneath Miocene volcanic cover within and adjacent to the Snowstorm property, eastern Humboldt County, Nevada, Report for Snowstorm Exploration LLC, 67 p.

Muntean, J., 2012, Petrographic work aimed at understanding geologic controls on gold recovery at the Lookout Mountain gold deposit: Progress Report #1: Report for Timberline Resources Corp., 19 p.

Cline, J., Muntean, J., Longo, A., Cassinerio, M., 2008, Collaborative research on fluid pathways and metal transport in Carlin-type gold deposits: Insights from the Getchell deposit: Final Report for the U.S. Geological Survey 2006 Mineral Resources External Research Program (MRERP), 128 p., <http://minerals.usgs.gov/mrerp/reports/Cline06HQGR0179.pdf>.

Muntean, J., 2007, Interpretation of alteration patterns at the Longhike/Alta and Bluster Areas at Jarbidge based on surface sampling, hole AJLH-006, and spectral reflectance analyses completed in October 2007: Report for Atna Resources, 41 p.

### **Websites and compact discs**

- Muntean, J. L., and Johnson, G., 2013, 43-101 report map service for mineral properties:  
[http://gisweb.unr.edu/report\\_43101\\_1/](http://gisweb.unr.edu/report_43101_1/)
- Muntean, J. L., 2012, Carlin-type Gold Deposits: A Compilation: Society of Economic Geologists Compilation 5 (CD). (includes preface summarizing the compiled papers and evolution of thought)
- Price, J. G., Coyner, A. R., Muntean, J. L., and Driesner, D., 2011, Update on production and exploration activity in Nevada: Northwest Mining Association, Reno, Nevada:  
[www.nbmj.unr.edu/\\_docs/Presentations/NWMAupdate11.pdf](http://www.nbmj.unr.edu/_docs/Presentations/NWMAupdate11.pdf)
- Price, J. G., Coyner, A. R., Muntean, J. L., and Driesner, D., 2010, Update on production and exploration activity in Nevada: Northwest Mining Association, Spokane, Washington: [www.nbmj.unr.edu/slides/NWMA\\_Nevada\\_presentation\\_9December2010\\_PDF.pdf](http://www.nbmj.unr.edu/slides/NWMA_Nevada_presentation_9December2010_PDF.pdf).
- Price, J. G., Coyner, A. R., Muntean, J. L., and Driesner, D., 2009, Update on production and exploration activity in Nevada: Northwest Mining Association, Reno, Nevada: [www.nbmj.unr.edu/dox/NWMAupdate09.pdf](http://www.nbmj.unr.edu/dox/NWMAupdate09.pdf).
- Price, J. G., Coyner, A. R., Muntean, J. L., and Driesner, D., 2008, Update on production and exploration activity in Nevada: Northwest Mining Association, Reno, Nevada: [www.nbmj.unr.edu/slides/NWMAupdate08.pdf](http://www.nbmj.unr.edu/slides/NWMAupdate08.pdf).
- Price, J. G., Coyner, A. R., Muntean, J. L., and Driesner, D., 2007, Update on production and exploration activity in Nevada: Northwest Mining Association, Spokane, Washington: [www.nbmj.unr.edu/slides/update07.ppt](http://www.nbmj.unr.edu/slides/update07.ppt).
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### **Abstracts**

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- Hill, T. J., Muntean, J. L., Creaser, R. A., Smith, M. T., 2015, Time-Space Relationships Between Sediment-hosted Gold Mineralization and Intrusion-Related Polymetallic Mineralization at Kinsley Mountain, Nevada, Nevada [abs.]: World Class Ore Deposits: Discovery to Recovery Proceedings, September 2015, Hobart, Tasmania, Australia.
- Howell, S. T. and Muntean, J. L., 2015, Spatial and Temporal Evolution of Hydrothermal Fluids of the Round Mountain Gold Deposit, Nevada [abs.]: World Class Ore Deposits: Discovery to Recovery Proceedings, Society of Economic Geologists, September 2015, Hobart, Tasmania, Australia.
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- Howell, S. T. and Muntean, J. L., 2015, Spatial and temporal evolution of hydrothermal fluids of the Round Mountain gold deposit, Nevada [abs.]: *in* Pennell, W. M. and Garside, L. J., eds., *New Concepts and Discoveries: Geological Society of Nevada Symposium Proceedings, May 2015*, Sparks, Nevada, compact disc.
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- Hill, T. J., Muntean, J. L., Hannink, R., Shabestari, P., 2014, Time-space relationships between sediment-hosted gold mineralization and intrusion-related polymetallic mineralization at Kinsley Mountain, Nevada SEG abstract [abs.]: *Society of Economic Geologists, Building Exploration Capability for the 21<sup>st</sup> Century*, Keystone, Colorado.
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## RESEARCH SUPPORT AND OTHER EXTERNAL FUNDING

### *Annual Donations to the Ralph J. Roberts Center for Research in Economic Geology*

- 2016: **\$247,200**, Sponsors: Newmont Mining Corp., Summit Mining International Inc., Coeur Mining Corp., Barrick Gold Corp., Klondex Mines Ltd, Pilot Gold Inc., Midas Gold Corp., Scorpio Gold Corp., Kinross Gold Corp., Premier Gold, Renaissance Gold Inc., NuLegacy Gold Corp., Great Basin GIS
- 2014: **\$158,200**, Sponsors: Newmont Mining Corp., Barrick Gold Corp., Pilot Gold Inc., Kinross Gold Corp., Round Mountain Gold Corp., Premier Gold, Goldcorp Inc., Richard Bedell, Canamex Resources Inc., Renaissance Gold Inc., NuLegacy Gold Corp., Terra Core International, Desert Pacific, Great Basin GIS
- 2013: **\$117,500**, Sponsors: Newmont Mining Corp., Barrick Gold Corp., Kinross Gold Corp., Round Mountain Gold Corp., Pilot Gold Inc., Canamex Resources Inc., Renaissance Gold Inc., NuLegacy Gold Corp.

### *Donations from Foundations*

**Wilson Family Foundation, \$750,000**, Nevada Electron Imaging and Microanalysis Laboratory, 2013, Gift to purchase two scanning electron microscopes (SEM) and setting up SEM laboratory within the Mackay School of Earth Sciences and Engineering in the College of Science at the University of Nevada Reno. (J. L. Muntean procured the donation)

### *Grants*

**United States Geological Survey:** New Geologic Mapping in the Kinsley Mountains, Elko and White Pine Counties, 7/1/2014 to 7/1/2015, **\$36,221**. (J.L. Muntean principal investigator, 18% overhead).

**Nevada Division of Minerals:** Mineral Resource Databases portion of Nevada Division of Minerals grant, 7/1/2013 to 6/30/2014, **\$100,000**. (J.E. Faulds , principal investigator; J.L. Muntean project leader)

**United State Fish and Wildlife Service:** Updated Mineral Assessment of the Desert National Wildlife Refuge, 2/1/2013 to 12/31/2014, **\$190,000**. (J. L. Muntean, principal investigator, fully overheaded)

**Rodeo Creek Gold Inc. (subsidiary of Great Basin Gold Ltd.):** Geology and Geochemistry of the Clementine Vein System at the Hollister High-Grade Epithermal Gold-Silver Deposit, 7/20/2012 to 7/19/2015, **\$110,633**. (J. L. Muntean , principal investigator, 20% overhead)

**Nevada Division of Minerals:** Mineral Resource Databases and Nevada Exploration Survey portions of Nevada Division of Minerals grant, 7/1/2012 to 6/30/2013, **\$150,000**. (J.E. Faulds , principal investigator, John Muntean project leader)

**National Science Foundation:** 2012 Gordon Research Conference on Geochemistry of Mineral Deposits, 6/1/12 to 6/1/2013, **\$20,000**. (J. L. Muntean, University of Nevada Reno and N. R. Gray, Gordon Research Conferences, principal investigators)

**United State Geological Survey:** 2012 Gordon Research Conference on Geochemistry of Mineral Deposits, 6/1/2012 to 6/1/2013, **\$10,000**. (J. L. Muntean, University of Nevada Reno and N. R. Gray, Gordon Research Conferences, principal investigators)

**Snowstorm Exploration LLC:** Snowstorm, 9/1/2011 to 6/30/2013, **\$73,272**. (J. L. Muntean, and C. D. Henry principal investigators, fully overheaded).

**United States Geological Survey:** New Geologic Mapping in Northern Nevada, South Eureka Mining District, 5/1/2011 to 5/1/2012, **\$61,213**. (S. P. Long, C. D. Henry, and J. L. Muntean principal investigators, 18% overhead).

**Timberline Resources Corp:** South Eureka, 10/21/2010 to 12/31/2015, **\$45,000**. (J. L. Muntean, S. P. Long, and C. D. Henry principal investigators, 18% overhead, Timberline supplemented the original \$20,000 grant with and additional \$25,000 in May 2012).

**United States Geological Survey:** History and Origin of Mineral Deposits in Nye County, Nevada, 8/4/09 to 5/31/2012, **\$388,312**. (J. L. Muntean, 80%, and C. D. Henry, 20%, principal investigators, fully overheaded)

**National Science Foundation:** 2008 Gordon Research Conference on Geochemistry of Mineral Deposits, 6/1/2008 to 6/1/2009, **\$20,000**. (J. L. Muntean, University of Nevada Reno and N. R. Gray, Gordon Research Conferences, principal investigators)

**United State Geological Survey:** 2008 Gordon Research Conference on Geochemistry of Mineral Deposits, 6/1/2008 to 6/1/2009, **\$10,000**, (J. L. Muntean, University of Nevada Reno and N. R. Gray, Gordon Research Conferences, principal investigators)

**National Science Foundation:** Collaborative Research on Fluid Pathways, and Metal Transport and Deposition in Carlin-type Gold Deposits: Insights from the Getchell System, 2/1/2007 to 6/30/2012, **\$162,544** (UNR portion, fully overhead), part of overall grant totaling **\$457,544** (J. S. Cline, University of Nevada Las Vegas and J. L. Muntean, University of Nevada Reno, principal investigators)

**U.S. Geological Survey Mineral Resources External Research Program:** Collaborative Research on Fluid Pathways and Metal Transport in Carlin-type Gold Deposits: Insights from the Getchell deposit, 6/30/2006 to 6/30/2008, **\$38,730** (fully overhead), subcontract through University of Nevada Las Vegas, part of overall grant totaling **\$151,000** (J. S. Cline and J. L. Muntean, principal investigators)

**Queenstake Resources:** Jerritt Canyon, 6/1/2005 to 12/31/2012, **\$88,000**, (J. L. Muntean and C. D. Henry, principal investigators, 18% overhead).

**Atna Resources:** Jarbidge, 9/1/2006 to 12/31/2010, **\$9,986** (principal investigator, fully overhead)

**United States Geological Survey:** Humboldt Basin New Geologic Mapping Project, Jerritt Canyon District, 5/1/2006 to 9/30/2007, **\$47,305** (J. L. Muntean and C. D. Henry, principal investigators, 18% overhead).

**Placer Dome:** Turquoise Ridge, 2/1/05 to 2/1/07, **\$41,600** (principal investigator, fully overhead).

**United States Geological Survey:** Humboldt Basin New Geologic Mapping Project, 5/1/05 to 10/31/06, **\$38,769** (J. L. Muntean and C. D. Henry, principal investigators, 18% overhead).

**University of Nevada Reno:** Internal Software Grant Program, 2005, **\$1,750** awarded to help purchase GOCAD software.

*Research grants awarded to my students (does not include CREG grants to my students once I became Director)*

**Society of Economic Geologists Student Research Grant,** Time-Space Relationships between Sediment-hosted Gold Mineralization and Intrusion-Related, Polymetallic Mineralization at Kinsley Mountain, Nevada, 2015, **\$3,000**, awarded to Tyler Hill.

**Society of Economic Geologists Student Research Grant,** Spatial and Temporal Evolution of Hydrothermal Fluids of the Round Mountain Gold Deposit, 2015, **\$4,100**, awarded to Steve Howell.

**Society of Economic Geologists Student Research Grant,** Controls on high grades within the Clementine Vein System at the Hollister low-sulfidation epithermal gold-silver deposit, Nevada, 2013, **\$2,500**, awarded to Joshua Smith.

**Society of Economic Geologists Student Research Grant,** Hydrothermal footprint of Carlin-type deposits in the Getchell District: Patterns of veins, alteration, veins, trace elements and isotopes around high-grade ore zones, 2008, **\$2,400**, awarded to Michael Cassinerio.

**Ralph J. Roberts Center for Research in Economic Geology, University of Nevada Reno,** Hydrothermal footprint of the Carlin-type deposits of the Jerritt Canyon district: District-scale patterns of trace elements, alteration, and isotopes along the Saval Discontinuity, 12/1/08 to 5/31/08, **\$9,588**, awarded to fund Lucia Patterson's MS thesis (additional funds to extend previous award).

**Ralph J. Roberts Center for Research in Economic Geology, University of Nevada Reno,** Hydrothermal footprint of the Carlin-type deposits of the Jerritt Canyon District: District-scale patterns of trace elements, alteration, and isotopes along the Saval Discontinuity, 1/1/07 to 12/31/07, **\$37,940**, awarded to Lucia Patterson.

**Society of Economic Geologists Student Research Grant,** Hydrothermal footprint of the Carlin-type deposits of the Jerritt Canyon district, Nevada, 2007, **\$4,700**, awarded to Lucia Patterson.

**Society of Economic Geologists Student Research Grant**, Alteration, gold mineralization and intrusive phases in the RBM pit, White Pine County, Nevada, 2007, **\$4,500**, awarded to Daniel Pace.

**Barrick Gold**, Characterization of the Time-Space Relationships between Hydrothermal Alteration, Gold Mineralization, and Intrusive Phases in the RBM Pit, Bald Mountain Mining District, White Pine County, Nevada, 2006, **\$17,165**, gift to fund to Dan Pace.

### ***In-kind support***

Queenstake Resources hired and paid the room and board for MS student, Lucia Patterson, to work at Jerritt Canyon mine (her thesis area) for the summer of 2006, prior to her first semester at UNR (~\$12,000). Barrick Gold hired and paid the room and board for MS student, Dan Pace, for the summer of 2007, after his first year at UNR (~\$12,000). They allowed him to work 100% on his thesis at the Bald Mountain mine. They also paid for geochemical analyses of samples he collected that summer (~\$1000). Barrick Gold hired and paid the room and board for MS student, Michael Cassinerio, to work at the Turquoise Ridge mine (his thesis area) for the summer of 2007 (~\$12,000), prior to his first semester at UNR, and 2008 (~\$12,000), during which he was allowed to work 100% on his thesis. Rodeo Creek Gold hired Joshua Smith for the summer of 2012, prior to his first semester at UNR (~\$12,000), and have committed to hiring him for the summer of 2013 to complete this field work for his thesis. Pilot Gold hired Tyler Hill to work at its Kinsley project (Tyler's thesis area) for the summers of 2013 and 2014 (~\$24,000). Round Mountain Gold Mine hired Steve Howell for summer of 2014 (~\$12,000) to work on thesis. Premier Gold hired Wilson Bonner to work at its Cove project (Wilson's thesis area) for summers of 2014 and 2015 (~\$25,000). Klondex Mines hired Justin Milliard for the summer of 2015 (~\$15,000). Midas Gold hired Sergey Konyshhev for the summer of 2015 (~\$12,000). Barrick Gold, Queenstake Resources/Yukon-Nevada Gold, Rodeo Creek Gold, Atna Resources, Timberline Resources, Snowstorm Exploration, Pilot Gold Inc. have made all their data available for their Getchell, Jerritt Canyon, Jarbidge, Eureka, Snowstorm, and Kinsley properties, on which I have done research. The value/cost of the tens of thousands of drill holes (logs, assays) and other data and analyses that these companies have collected, made available, and paid for amounts to over \$250 million.

## **TEACHING**

### ***Graduate student supervision***

**Graduate Faculty**, Dept. of Geological Sciences and Engineering, University of Nevada, Reno **2005-present**

- Primary advisor of 11 Master's students and 2 PhD candidates.
  - Sergey Konyshhev (2015-present)
    - PhD: Diversity of Sediment-Hosted Gold Mineralization in the Stibnite Mining District, Idaho
  - Justin Milliard (2015-present)
    - PhD: Regional Controls on Epithermal System Formation within an Intra-Continental Rift Setting, Northern Nevada Rift, North-Central Nevada
  - Tracy Anderson (2015-present)
    - MS thesis: Evaluation of Supergene Silver Enrichment at the Rochester Mine in Pershing County, Nevada
  - Patrick Quillen (2014-present)
    - MS thesis: Time-Space Relationships between Magmatism, Hydrothermal Alteration, and Mineralization in the Berlin and Buffalo Canyon Areas of the Union District, Nevada
  - Wilson Bonner (2014-present)
    - MS thesis: Distribution of Gold and Silver and Spatial and Temporal Relationship between Deep Polymetallic and Carlin-Style Mineralization at Cove
  - Steve Howell (2013-present)
    - MS thesis: Spatial and Temporal Evolution of Hydrothermal Fluids of the Round Mountain Epithermal Gold Deposit, Nevada
  - Tyler Hill (2013-present)

- MS thesis: Relationship of Eocene magmatism to skarn, polymetallic and Carlin-type gold mineralization in the Kinsley District, Nevada
- Tim Cramer (2012-2014)
  - Completed MS thesis: Using Landsat ETM+ and ASTER sensors to aid the mineral assessment of the Desert National Wildlife Refuge, Clark and Lincoln Counties, Nevada: Unpublished Master's thesis, University of Nevada Reno, 116 p.
- Joshua Smith (2012-2014)
  - Completed MS thesis: Controls on high grades within the Clementine vein system at the Hollister low-sulfidation epithermal Au-Ag deposit, Nevada: Unpublished Master's thesis, University of Nevada Reno, 105 p.
- Michael Cassinerio (2007-2010)
  - Completed MS thesis: Cassinerio, M. D., 2010, Patterns of lithology, alteration, trace elements, carbonate mineralogy, and stable isotopes around high-grade Carlin-type gold deposits: Turquoise Ridge deposit, Getchell District, Nevada: Unpublished Master's thesis, University of Nevada Reno, 215 p.
  - Second Place Best Student Paper Award, 2010 Geological Society of Nevada Symposium
- Daniel Pace (2006-2009)
  - Completed MS thesis: Pace, D. W., 2009, Relationship between magmatism and mineralization in the RBM gold deposit, White Pine County, Nevada: Unpublished Master's thesis, University of Nevada Reno, 172 p.
  - Currently employed by Renaissance Gold Inc., Reno, Nevada
- Lucia Patterson (2006-2009)
  - Completed MS thesis: Patterson, L. M., 2009, Hydrothermal footprint of the Carlin-type gold deposits at the District Scale: Jerritt Canyon Mining District, Elko County, Nevada: Unpublished Master's thesis, University of Nevada Reno, 240 p.
  - Best Student Paper Award, 2010 Geological Society of Nevada Symposium
  - Currently employed by Nevada Division of Minerals, Carson City, Nevada
- Served on thesis committees of other MS and PhD students in UNR's GES department (2006-present).
  - Ajeet Milliard (PhD, 2014-present, Mike Ressel, primary advisor)
  - Carli Balogh (MS, 2014-present, Peter Vikre, primary advisor)
  - Elizabeth Bengé (MS, 2014-present, Paula Noble, primary advisor)
  - Saige Sanchez (MS, 2012-present, Greg Arehart, primary advisor)
  - Dylan Baldwin (MS, 2012-2014, Greg Arehart, primary advisor)
  - Russell DiFiori (MS, 2012-2014, Sean Long, primary advisor)
  - Katie Wickham (MS, 2012-2014, Greg Arehart, primary advisor)
  - Geoff Burtner (MS, 2013, Tommy Thompson, primary advisor)
  - Randall Hannink (MS, 2006-2009, Tommy Thompson, primary advisor)
  - Matthew Hastings (MS, 2006-2008, Tommy Thompson, primary advisor)
  - Richard Trotman (MS 2005-2008, Tommy Thompson, primary advisor)

**Graduate Faculty, Department of Geoscience, University of Nevada Las Vegas**

**2008-present**

- Primary advisor of 1 MS student
  - Brian Aillaud (2008-2010), Adam Simon, primary co-advisor)
    - Completed MS thesis: Aillaud, B. J., 2010, Using fluid inclusions to trace formative fluid evolution at the Verde and Pancho porphyry Au deposits of the Refugio district, Chile: Unpublished Master's thesis, University of Nevada Las Vegas, 209 p.
    - Brian was awarded a Society of Economic Geologists Foundation 2008 Graduate Fellowship Award (\$12,500).
- Served on thesis committee of other MS students in UNLV's Department of Geoscience (2006-present).
  - Melanie Newton (2013-2015, Jean Cline primary advisor)
  - Lindsey Clark (2011-2012, Jean Cline and Adam Simon, co-primary advisors)
  - Nathan Eck (2009-2010, Adam Simon and Jean Cline, co-primary advisors)

***Courses taught***

**Department of Geological Sciences and Engineering, University of Nevada Reno**

**2012-Present**

- Teaching: Courses for Credit
  - GEOL 771 Hydrothermal Ore Deposits (3 credits, Spring 2015)
  - GEOL 701F, Introduction to Leapfrog 3D Geological Modeling Software, (1 credit, Spring 2015)
  - GEOL 701Y, Introduction to ioGAS Geochemical Data Analysis Software, (1 credit, Spring 2015)
  - GEOL 451, Taught field exercise for Geology Summer Field Course, (Summers 2012-2015)
  - GEOL 495, Independent Study Course (for undergraduate) (2012-2013)
  - GEOL 701R, Field Mapping of Ore Deposits: The Yerington Porphyry Copper System (2 credits, Spring 2013-2015)
  - GEOL 701TY, Field Spectroscopy Applied to Hydrothermal Alteration and Mineral Exploration (2 credits, Spring 2013)
- Teaching: Informal Instruction
  - Presented two guest lectures for GEOL 471/671 Ore Deposits. (November 19, 21, 2012)
  - Taught 3-day field course on detailed geologic mapping in the Yerington mining district. My three MS students, at the time, attended. (May 20-22, 2007)
  - Presented guest lecture to students for GEOL 471/671 Ore Deposits. (October 23, 2006)
  - Hired and supervised UNR undergraduate (Adam King) to carry out GIS work. (2005-2006).

*Other teaching experience*

**Skype Lecture, University of Michigan, Dept. of Geological Sciences, Ann Arbor MI**

**2015**

- Presented on Lecture to Advanced Ore Deposits Course.

**Instructor, Academy of Art College, Liberal Arts Program, San Francisco, CA**

**1996**

- Introduction to Physical Geography, Fall 1996. Supervisor: Sue Rowley

**Teaching Assistant, Stanford University, Dept. of Geological and Environmental Sciences**

**1992-1993**

- Mineralogy, Fall 1992, Professor: Gordon Brown.
- Physical Geology, Winter, Spring 1993, Professors: Juhn Liou and Gordon Brown

## AWARDS

**University of Nevada Reno**

- Dr. Donald Mousel and Dr. William Feltner Annual Award for Excellence in Research, College of Science, 2011.

## SERVICE

*Professional society work*

**Society of Economic Geologists (Fellow, 1989)**

- Member of Nominating Committee (2014)
- Co-led SEG field trip “Porphyry and High-Sulfidation Epithermal Gold Deposits of the Maricunga Belt, Chile” with Jack Pritting (Kinross Gold) (2012).
- Instructor for a SEG short course on Carlin-type gold deposits in Nevada at SEG headquarters in Littleton, Colorado (2012).
- Editor of compiled SEG publications on Carlin-type gold deposits, released as a CD in 2012.
- Co-instructor for SEG short course on Carlin-type gold deposits in Nevada at SEG headquarters in Littleton, Colorado (2011).

- Instructor for Carlin-type deposits at SEG-sponsored short courses on gold deposits in Beijing, China (2003), Moscow, Russia (2004), and Reno, Nevada (2010).
- Elected member of SEG Council (2006-2008).
- Appointed Chair of SEG Medals Committee (2007, 2008).
- Advisor to SEG student chapter at University of Nevada Reno (1999-2001, 2006-present).
- Participant in SEG's online mentoring program (2006-present).
- Gave invited lecture on mentoring at SEG's Symposium at Keystone, Colorado (May 2006).
- Coordinator for the SEG-sponsored student-mentor workshop held at the 2005 Geological Society of Nevada Symposium (May 2005).
- Member of ad-hoc committee on mentorship (2003).
- Member of Student Affairs Committee (2001-2002).

**Geological Society of America (Member)**

**Geological Society of Nevada (Member)**

- Co-leader of spring 2006 field trip.

**Society for Geology Applied to Mineral Deposits (Member)**

*Editorial service*

**Editorial Board Member, *Economic Geology* (2008-2012)**

- Accepted invitation by the Editor to serve 5-year term.
- Handled 17 manuscripts.

**United States Geological Survey (2007)**

- Member of review panel for Mineral Resources External Research Program (2007).

**Manuscript/Map Reviews**

- Reviewed 11 manuscripts for *Economic Geology* (1997-2015).
- Have reviewed 3 maps and 1 manuscript for the Nevada Bureau of Mines and Geology (1998-present).
- Reviewed manuscripts for *Geology* (2), *Mineralium Deposita* (3) *SEG Newsletter* (1), *Ore Geology Reviews* (1), and *Geochemistry Exploration Environment Analysis* (1997-present).
- Reviewed 2 NSF proposals (2010, 2015).
- Reviewed 2 NSERC proposals (2015)
- Thesis examiner for PhD theses (2012-2013): University of Tasmania (2)

*Organization of professional meetings*

**Society of Economic Geologists Forum – “Diversity of Carlin-style Gold Mineralization” (2015)**

- Co-organizer of forum held as part of Geological Society of Nevada's 2015 Symposium and editor of *SEG Reviews in Economic Geology* volume on Diversity of Carlin-Style Gold Mineralization (2014-2016)

**Geological Society of Nevada 2015 Symposium**

- Co-chair of the Technical Program for the 2015 Symposium (2013-2015)

**Society of Economic Geologists Forum – “World Class Controversies – Genesis of the Witwatersrand and Carlin gold systems” (2005)**

- Organized and ran every aspect of the unique one-day SEG-sponsored forum that featured a debate-like format (May 2005).

**Gordon Research Conferences on Geochemistry of Mineral Deposits (2005-2012)**

- Chair for the 2012 meeting at Proctor Academy in Andover, New Hampshire (elected 2005).
  - Organized technical program that included devising session topics and inviting speakers and discussion leaders.
  - Helped raise \$76,000 from NSF, USGS, Society of Economic Geologists, and industry to attract speakers and assist students and post-docs in attending the conference.
  - Successfully ran the conference.
- Served as Vice-Chair (elected in 2005) for the 2008 meeting in Il Ciocco, Italy:
  - Raised funds from NSF and the USGS.
  - Organized poster session.

### **Society of Economic Geologists Forum – “World Class Controversies – Genesis of the Witwatersrand and Carlin gold systems” (2005)**

- Organized and ran every aspect of the unique one-day SEG-sponsored forum that featured a debate-like format (May 2005).

### ***Departmental service***

#### **Nevada Bureau of Mines and Geology**

- Member of Search Committee for Structural Geology Faculty Position (2015-2016).
- Member of Search Committee for Director of Geothermal Center Faculty Position (2015).
- Chair of Search Committee for Economic Geology Faculty Position (2013-2014).
- Member of Faculty Search Committee for 2 Mapping Faculty Positions (2013).
- Helped with filming of WebsEdge video on NBMG (2013).
- Chair of Search Committee for Economic Geology/Geothermal Faculty Position (2010-2011).
- Member of Faculty Search Committee for Structural Geology Position (2009-2010).
- Elected member of NBMG Personnel Committee (2006, 2008, 2010, 2012, 2014, 2016).
- Member of NBMG By-laws Committee (2007-2008).
- Member of Search Committee for Chief Cartographer/Senior Cartographer Faculty Position (2007).

#### **Department of Geological Sciences and Engineering**

- Member of Faculty Search Committee for Igneous Petrologist Position (2015).
- Director of Ralph Roberts Center of Research in Economic Geology (2012-present).
- Member of Graduate Admissions Committee (2010, 2012, 2013, 2014, 2015).

### ***University service***

#### **College of Science**

- Participant in the inaugural Faculty Administrative Leadership Program (2014).
- Chaired Committee to purchase and set up new scanning electron microscope lab (2013-2014).
- Attended short course by Academic Impressions entitled “Fundraising Strategies for Academic Leaders and Advancement Professionals” (2013).
- Chaired Committee that recommended the recipient of the 2012 Dr. Donald Mousel and Dr. William Feltner Annual Award for Excellence in Research.

#### **Government Affairs**

- Pulled together mineral resource data and maps for the Governor’s office and Nevada Congressional Delegation to help them make policy decisions regarding the sage grouse (2012-2015).
- Advised Robert Dickens (Vice-President of Government Affairs) on mineral potential of various UNR land holdings.

### ***Media***

#### **History Channel’s “How the Earth was Made” Television Series (2009-2010)**

- Accepted invitation to participate in the filming and production of “America’s Gold”, an episode on the History Channel’s “How the Earth was Made” television series.
- Episode aired in 2010 and several times thereafter.

#### **KUNR’s “Few Minutes with Milt” Radio Series (2011)**

- Interviewed by University of Nevada President Milton Glick about my research on Carlin-type gold deposits in Nevada.

#### **Newspapers and Magazines**

- Interviewed and quoted by *Wall Street Journal*, *New Scientist Magazine*, *Earth Magazine*, *Nevada Business Magazine*, *Reno Gazette Journal*, and *Arizona Republic*

### *Other service*

#### **Earthscope Workshop (2004)**

- Accepted invitation to participate in NSF-funded workshop at Lake Tahoe.

#### **University of Arizona/United States Geological Survey (2003)**

- Accepted invitation to participate in a workshop aimed at long-range planning for the University of Arizona-U.S.G.S. Center for Mineral Resources in Tucson (Dec 2003).

#### **Schools/Community Groups**

- Have given 19 presentations on geology, volcanoes, mapping and mineral exploration to 1<sup>st</sup>-6<sup>th</sup> grade classes at elementary schools in Nevada and California (1996-present).

## **INVITED LECTURES**

### **(excluding talks for which there were abstracts or articles)**

- “An Update on Metal Exploration Activity in Nevada,” Presented at American Exploration and Mining Association Annual Meeting, December 2, 2015, Richard Perry (org.).
- “Nevada Bureau of Mines and Geology: Its Role in Maintaining Nevada’s Modern Gold Boom,” Lecture for Nevada Mineral Exploration Coalition general meeting, November 5, 2015, Reno, Nevada, David Shaddrick (org.).
- “The Economic Geology Program at UNR,” Presented to College of Science Advisory Board, November 14, 2014, Reno, Nevada, Dr. Jeffrey Thompson (org.).
- “Ralph J. Roberts Center for Research in Economic Geology,” Lecture for Nevada Mineral Exploration Coalition general meeting, October 29, 2014, Reno, Nevada, David Shaddrick (org.).
- “Update on CREG and the Economic Geology Program at UNR,” Presented to Mackay Advisory Board, October 24, 2014, Reno, Nevada, Russ Fields (org.).
- “Nevada: One of the World’s Premier Metallogenic Provinces. What Makes it Tick?” Lecture for the Vancouver Mining and Exploration Group, December 12, 2013, Vancouver, British Columbia, Ian Foreman (org.).
- “Overview of Mineral Exploration, Development and Production in Nevada,” Lecture for the Burlington Northern Santa Fe Railroad for Nevada Governor’s Office of Economic Development, September 10, 2013, Elko, Nevada, Todd Valline (org.).
- “Porphyry and High-Sulfidation Epithermal Gold Deposits of the Maricunga Belt, Chile,” Lecture for Society of Economic Geologists field trip “Porphyry and High-Sulfidation Epithermal Gold Deposits of the Maricunga Belt, Chile,” Copiapo, Chile, September 26, 2012, Jack Pritting (org.).
- “Carlin-type Deposits,” Four lectures as part of a week-long Society of Economic Geologists Short Course on Gold Deposits and Rare Earth Elements, June 20, 2012, Littleton, Colorado, Dr. Richard Goldfarb (org.). [*full-day workshop*]
- “Ferroan Carbonates in Carlin-type gold deposits: Real-time Detection of an Important Ore Control by Carbonate Staining” Geological Society of Nevada (Winnemucca chapter meeting), February 8, 2012, Winnemucca, Nevada, Erin Gray (org.).
- “Tectonic and Geologic Setting of Carlin-type Gold Deposits in Nevada,” lecture at China University of Geosciences, Beijing, China, November 21, 2011, Dr. Xuexiang Gu (org.).
- “Tectonic and Geologic Setting of Carlin-type Gold Deposits in Nevada,” lecture at Institute of Geochemistry, Chinese Academy of Sciences, Guiyang, China, November 18, 2011, Dr. Yong Xia (org.).
- “Magmatic-Hydrothermal Origin of Nevada’s Carlin-type gold Deposits,” lecture at Newmont Mining, in-house technical session, Elko, Nevada, October 18, 2011, Dr. Antonio Arribas (org.).
- “Gold deposits of the Maricunga Belt, Northern Chile,” lecture at Kinross Gold company-wide, in-house technical session, Copiapo, Chile, October 4, 2011, Jack Pritting (org.).
- “Ferroan Carbonates in Carlin-type gold deposits: Real-time Detection of an Important Ore Control by Carbonate Staining” Geologic Society of Nevada, September 9, 2011, Reno, Nevada, William Howald (org.).
- “Carlin-type Gold Deposits” Three lectures as part of workshop on Carlin –type Gold Deposits in Nevada for Snowstorm Exploration LLC, June 22, 2011, Win Rowe (org.). [*one-day workshop*]
- “Geochemical Exploration for Gold through Transported Alluvial Cover in Nevada: Examples from the Cortez Mine,” Geologic Society of Nevada (Elko chapter meeting), May 19, 2011, Elko, Nevada, Jared Townsend (org.).

- “Carlin-type Gold Deposits” Four lectures as part of a Society of Economic Geologists Short Course on Carlin –type Gold Deposits in Nevada,” co-instructed with Dr. Jean Cline, March 24-25, 2011, Littleton, Colorado, Dr. Thomas Monecke (org.). [*two-day workshop*]
- “Carlin-type Deposits,” Society of Economic Geologists Short Course on Gold Deposits, May 15, 2010, Reno, Nevada, Dr. Richard Goldfarb (org.). [*half-day workshop*]
- “Models for Carlin-type Gold Deposits”, presented to Barrick Gold, February 23, 2010, Turquoise Ridge mine, Nevada. Simon Pollard (org.) [*full-day workshop for Turquoise Ridge mine staff*]
- “The Porphyry-Epithermal Transition: Examples from the Maricunga Belt”, presented to Kinross Gold, December, 14, 2009, Reno, Nevada, Dr. Michael Ressel (org.). [*half-day workshop for Kinross Gold geologists*]
- “Origin of Carlin-type Gold Deposits,” Northwest Mining Association Annual Meeting, December 3, 2009, Reno, Nevada, Dr. Harry Cook (org.).
- “Carlin-type Gold Deposits: Products of Degassing Deep Plutons,” Geologic Society of Nevada (Elko chapter meeting), April 16, 2009, Elko, Nevada, Dr. Moira Smith (org.).
- “Exploration for Carlin-type Deposits in a Mature Terrain: Maintaining Nevada's gold rush,” Geologic Society of Nevada (Southern Nevada chapter meeting), February 26, 2009, Las Vegas, Nevada, Dr. Jean Cline (org.).
- “Controversies Surrounding the Origin of a Quarter of the World’s Annual Gold Production: The Witwatersrand of South Africa and the Carlin Trend of Nevada,” University of Nebraska Department of Geosciences Stout Lecture Series, February 6, 2009, Lincoln, Nebraska, Dr. Richard Kettler (org.).
- “Application of TerraSpec Pro Case Study: Exploration for Low-Sulfidation Bonanza Vein Gold Deposits”, Northwest Mining Association Short Course on Remote Sensing for Exploration, December 1, 2008, Reno, Nevada, Phoebe Hauff (org.).
- “Tectonic, Geologic, and Exploration Models for Carlin-type Gold Deposits”, Barrick Gold Workshop, April 30, 2008, Elko, Nevada, Paul Dobak (org.). [*half-day workshop for Barrick Gold geologists*]
- “Controversies Surrounding the Origin of a Quarter of the World’s Annual Gold Production: The Witwatersrand of South Africa and the Carlin Trend of Nevada,” University of Kentucky Department of Earth and Environmental Sciences Rast-Holbrook Lecture Series, November 29, 2007, Lexington, Kentucky, Dr. David Moecher (org.).
- “Inversion Tectonics in North-Central Nevada: Controls on the Formation of Lower Plate Windows and Structural Traps for Carlin-type Gold Deposits,” presented at Newcrest Mining’s Americas Annual Exploration Meeting, May 15, 2007, Reno, Nevada, Graeme Davis (org.).
- “The Porphyry-Epithermal Transition: Examples from the Maricunga Belt”, presented at Newcrest Mining’s Americas Annual Exploration Meeting, May 15, 2007, Reno, Nevada, Graeme Davis (org.).
- “Sources, Pathways, and Depositional Sites for Hydrothermal Fluids that form Carlin-type Gold Deposits, Getchell District, Nevada,” Mackay Seminars in Economic Geology, University of Nevada Reno, May 4, 2007, Dr. Jonathan Price, (org.).
- “Inversion Tectonics in North-Central Nevada: Controls on the Formation of Lower Plate Windows and Structural Traps for Carlin-type Gold Deposits,” University of Nevada Las Vegas Geology Lecture Series, April 25, 2007, Las Vegas, Nevada, Dr. Jean Cline (org.).
- “Tectonic and Structural Setting for Carlin-type Gold Deposits with a Focus on Recognizing Reactivated Basement Faults,” Newmont Mining Workshop, February 28, 2007, Elko, Nevada, Richard Reid (org.). [*half-day workshop for Newmont geologists*]
- “The Porphyry-Epithermal Transition: examples from the Maricunga Belt,” presented to students of UNR GES course 671 Ore Deposits, October 23<sup>rd</sup>, 2006, Dr. Gregory Arehart (org.).
- “Sources, Pathways, and Depositional Sites for Hydrothermal Fluids that form Carlin-type Gold Deposits, Getchell District, Nevada,” Gordon Research Conference on Inorganic Geochemistry: Ore Deposits, August 3, 2005, Andover, New Hampshire, Dr. Jean Cline (org.).
- “Models for Carlin-type Deposits,” Society of Economic Geologists Short Course on Gold Deposits, November 18, 2004, Moscow State University, Moscow, Russia, Dr. Richard Goldfarb (org.).
- “Models for Carlin-type Deposits,” Society of Economic Geologists Short Course on Gold Deposits, October 25, 2003, China University of the Geosciences, Beijing, China, Dr. Richard Goldfarb (org.).
- “The Porphyry-Epithermal Transition: Examples from the Maricunga Belt, Northern Chile,” Ralph J. Roberts Lecture Tenth Distinguished Lecture in Economic Geology, April 25, 2003, Mackay School of Mines, Reno, Nevada, Dr. Tommy B. Thompson (org.).
- “Paleozoic Normal Faults in North-Central Nevada – Deep Crustal Conduits for Carlin-Type Gold Deposits,” Symposium honoring the retirement of Marco Einaudi, April 3, 2003, Colorado School of Mines, Golden, Colorado, Dr. Murray Hitzman (org.).

"Pueblo Viejo, Dominican Republic: a World-Class High Sulfidation Epithermal Gold Deposit," University of Nevada Reno Geology Lecture Series, November 12, 1999, Reno, Nevada, Dr. Gregory Arehart (org.).  
"Magmatic-Hydrothermal Gold Deposits of the Maricunga Belt, Northern Chile" and "Pueblo Viejo, Dominican Republic: a World-Class High Sulfidation Epithermal Gold Deposit," New Mexico Institute of Mining and Technology Geology Lecture Series, November 4, 1999, Socorro, New Mexico, Nigel Blamey (org.).  
"Porphyry-Epithermal Transition: Maricunga Belt, Northern Chile," Gordon Research Conference on Inorganic Geochemistry: Ore Deposits, August 14, 1997, New Hampshire, Dr. Mark Reed (org.).

### **VOLUNTEERED LECTURES (excluding talks for which there were abstracts)**

"The Carlin gold system: Applications to exploration in Nevada and elsewhere," presented at Society of Economic Geologists Forum – "Diversity of Carlin-style Gold Mineralization", held as part of Geological Society of Nevada's 2015 Symposium, Sparks, Nevada, May 17, 2015  
"Nevada: America's True Golden State," presented to public at Nevada Bureau of Mines open house, Reno, Nevada, October 15, 2014.  
"Genetic Model for Carlin-type Gold Deposits," presented to Colorado School of Mines student field trip group, Reno, Nevada, March 8, 2014.  
"Overview of the Activities of the Nevada Bureau of Mines and Geology as they pertain to Mineral Exploration and Mining," presented to Nevada Mining Oversight and Accountability Commission, Carson City, Nevada, October 31, 2013.  
"Carlin-type Gold Deposits in Nevada," presented to Colorado School of Mines student field trip group, Reno, Nevada, March 9, 2013.  
"Tectonic and Geologic Setting of Carlin-type Gold Deposits in Nevada," presented to Laurentian University student field trip group, Reno, Nevada, April 24, 2012.  
"The Porphyry-Epithermal Transition: examples from the Maricunga Belt," presented at the University of Nevada Las Vegas, Las Vegas, Nevada, April 26, 2007.  
"The Porphyry-Epithermal Transition: examples from the Maricunga Belt," presented at the Colorado School of Mines, Golden, Colorado, October 19, 2006.  
"Turquoise Ridge Deposit: Basin Margin Control on Gold Grade," presented to Queenstake Resources geologists at Jerritt Canyon mine, Nevada, March 15, 2006.  
"The Porphyry-Epithermal Transition: examples from the Maricunga Belt," presentation to Kinross Gold, Bema Gold, and Minera Andina geologists, Refugio Mine, Andes Mountains, Chile, February 21, 2006.  
"Magmatic-hydrothermal gold deposits of the Maricunga Belt," presentation to Kinross Gold geologists, Refugio Mine, Andes Mountains, Chile, March 4, 2005.

**VOLUNTEERED LECTURES**  
**(excluding talks for which there were abstracts)**

- [“The Carlin gold system: Applications to exploration in Nevada and elsewhere,” presented at Society of Economic Geologists Forum – “Diversity of Carlin-style Gold Mineralization”, held as part of Geological Society of Nevada’s 2015 Symposium, Sparks, Nevada, May 17, 2015](#)
- “Nevada: America’s True Golden State,” presented to public at Nevada Bureau of Mines open house, Reno, Nevada, October 15, 2014.
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- “Tectonic and Geologic Setting of Carlin-type Gold Deposits in Nevada,” presented to Laurentian University student field trip group, Reno, Nevada, April 24, 2012.
- “The Porphyry-Epithermal Transition: examples from the Maricunga Belt,” presented at the University of Nevada Las Vegas, Las Vegas, Nevada, April 26, 2007.
- “The Porphyry-Epithermal Transition: examples from the Maricunga Belt,” presented at the Colorado School of Mines, Golden, Colorado, October 19, 2006.
- “Turquoise Ridge Deposit: Basin Margin Control on Gold Grade,” presented to Queenstake Resources geologists at Jerritt Canyon mine, Nevada, March 15, 2006.
- “The Porphyry-Epithermal Transition: examples from the Maricunga Belt,” presentation to Kinross Gold, Bema Gold, and Minera Andina geologists, Refugio Mine, Andes Mountains, Chile, February 21, 2006.
- “Magmatic-hydrothermal gold deposits of the Maricunga Belt,” presentation to Kinross Gold geologists, Refugio Mine, Andes Mountains, Chile, March 4, 2005.