GOLD IN 2000

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BIographies

antonio arribas rosado started research in economic geology at the University of Salamanca, Spain, with a thesis on the origin of strata-bound W mineralization in Paleozoic sedimentary rocks of the Iberian peninsula. Between 1983 and 1985 he developed an interest in electron microbeam and X-ray techniques to enable these tools to be used routinely and efficiently for numerous theses and collaborative projects with industry. Following two years as assistant professor at the University of Salamanca, he moved to the United States on a United States-Spain Joint Committee Fulbright fellowship and begun Ph.D. work at the University of Michigan, Ann Arbor, on the geology and geochemistry of the Rodalquilar high-sulfidation epithermal deposit. From Michigan, he moved in 1992 to the Geological Survey of Japan in Tsukuba to investigate active volcanic-hydrothermal systems and the genetic relationship between porphyry and epithermal deposits. In 1996 he joined Placer Dome Exploration, Inc., as Senior Geologist with the Long-term Generative Group. At present he is Assistant to the Vice-President of Exploration and Corporate Development and a member of the in-house Technical Services Group with responsibilities to aid in the generation and evaluation of epithermal projects worldwide.

Mark D. Barton is professor of geology and Director of the Center for Mineral Resources at the University of Arizona (B.S., M.S., Virginia Polytechnic Institute and State University, 1977, 1978; Ph.D., University of Chicago, 1981). He was previously on the faculty at the University of California, Los Angeles, before moving to Arizona in 1990. His research interests broadly deal with understanding energy and mass transfer in the Earth’s lithosphere and applications to natural resources. Current research focuses on magmatic evolution and links with hydrothermal systems, the role of surficial conditions in mass transfer systems, and regional and global assessment of mineralizing systems through time. Regional studies have centered on southwestern North America in the context of the Pacific Rim. Porphyry, skarn, Fe oxide-(REE-Cu-Au) and other igneous-related systems remain the focus of deposit studies. In 1991, he was given the Mineralogical Society of America Award, and in 1992, the Society of Economic Geologists Lindgren Award. He was one of the two SEG International Exchange Lecturers for 1999.

Frank P. Bierlein obtained an M.Sc. degree in geology from the University of Heidelberg in 1991 and completed a Ph.D. on aspects of base metal, gold, and PGE mineralization in the Willyama inliers in South Australia at the University of Melbourne in 1996. In the same year, he joined the Australian Minerals Industry Research Institute at the University of Ballarat as a postdoctoral research fellow and became involved in studying the genesis of gold and VHMS mineralization in Victoria, with particular emphasis on aspects of timing and wall-rock alteration. He has since been involved in numerous petrological, geochemical and isotopic investigations dealing with slate belt-hosted gold mineralization in southeast Australia, New Zealand, and Canada. He is currently holder of a Logan Post-Doctoral Fellowship in the Victorian Institute of Earth and Planetary Sciences at Monash University.

Philip E. Brown has a B.A. degree from Carleton College (1974) and M.S. (1976) and Ph.D. (1980) degrees in economic geology from the University of Michigan. He has taught at the University of Wisconsin-Madison since 1981, where he is professor of economic geology and teaches a range of undergraduate and graduate classes. He has undertaken research projects on several continents and has focused on fluid inclusions and Archean gold deposits for the past 15 years. Present interests include FTIR analysis of geologic samples, applications of technology to improving teaching and distance education, and the development of 3-D computer graphics to aid students in grasping the geography and geometry of the world around them.

Kevin F. Cassidy completed a Ph.D. degree at the University of Western Australia in 1992, focusing on Archean granitoid-hosted lode gold deposits in the Yilgarn craton, Western Australia. From 1992 to 1995, he undertook postdoctoral work at the University of Saskatchewan on the temporal relationship of lode gold deposits to magmatism, metamorphism, and deformation, and on the geochemical and isotopic characteristics of alkalic intrusions associated with gold-rich porphyry systems in the Canadian Cordillera, the latter in conjunction with researchers at the Mineral Deposit Research Unit, University of British Columbia. Since 1995, he has been with the Australian Geological Survey Organisation, Canberra. His work has focused on developing a detailed geologic and metallogenic framework of the Yilgarn craton, as well as on continuing research into lode gold mineralizing systems. Most of his work has involved collaborative projects with university and industry partners, principally through the Australian Minerals Industry Research Institute. He is currently Project Leader for AGSO projects in the Yilgarn craton.

Jean S. Cline is currently an associate professor at the University of Nevada, Las Vegas. After receiving a B.Sc. degree from the University of Wisconsin-Platteville, Cline spent 10 years exploring for base and precious metals, primarily in the western United States, for Inspiration Development Company. A casualty of the downturn in the mining industry during the 1980s, Cline returned to school and earned an M.Sc. degree from the University of Arizona in 1986, and a Ph.D. degree from Virginia Polytechnic Institute and State University in 1990. Upon graduation, Cline joined the faculty at UNLV. Current research is focused on combining field studies, petrographic work, laboratory analyses, and numerical modeling to elucidate the geochemical evolution and development of hydrothermal systems.
BIOGRAPHIES (continued)

DAVID R. COOKE completed a B.Sc. (hons.) degree at Latrobe University in 1985, prior to undertaking Ph.D. studies at Monash University, where he investigated relationships between low-sulfidation epithermal gold and porphyry copper-gold mineralization in the Philippines. Since 1991, he has worked at the University of Tasmania, investigating the geology and geochemistry of hydrothermal systems, with emphasis on porphyry, epithermal, and sedex styles of mineralization. He is currently a senior lecturer in hydrothermal geochemistry, and is the leader of Program 5 (hydrology and chemistry of hydrothermal systems) at the Centre for Ore Deposit Research.

DOUG CROWE is an associate professor of geology at the University of Georgia. He worked for Anaconda Minerals and Cominco Alaska Exploration before assuming his current position at Georgia. He received his B.S. degree from Colgate University and his Ph.D. degree from the University of Wisconsin-Madison. His research interests include the geology and geochemistry of VHMS, skarn, and epithermal systems. He has advised students on a broad range of industry-funded projects including work in Alaska, Nevada, Colorado, and Russia, as well as work on modern sea-floor hydrothermal environments. He currently directs the University of Georgia stable isotope facility.

LARRY W. DIAMOND is professor of mineralogy and petrology at the Institute of Geological Sciences, University of Leoben, Austria. He conducted his doctoral research at ETH-Zürich on hydrothermal gold deposits, and continued work on this topic at posts in Ottawa and Bern. His main interests are in the genesis of hydrothermal ore deposits, fluid-rock interaction, fluid phase relations, and the systematics and applications of fluid inclusion studies.

POUL EMSBO received his B.S. degree in biology and chemistry from Union College. He received his M.S. and Ph.D. degrees in geology from the Colorado School of Mines. His master’s research contributed to the understanding the stratigraphy and metallogeny of the “upper plate” Vinini and Valmy Formation in Nevada. His dissertation research focused on the genesis of the Meikle high-grade Carlin-type gold deposit and the geology and stratigraphy of the northern Carlin trend. While at CSM he also worked at the U.S. Geological Survey, where he helped develop a new method for analysis of electrolytes in fluid inclusions, established methods for the analysis of cyanide species, conducted research on basin fluid chemistry in Mississippi Valley-type and sedex deposits, and studied Carlin-type deposits under the Western Gold Project. Currently, Embsbo is employed by the U.S. Geological Survey, investigating a possible link between sedex Au and Carlin-type mineralization on the Carlin trend and leading a new project on the chemistry of basin fluids.

STEVEN GARWIN obtained a B.S. degree in geology from Stanford University in 1984 and an M.Sc., geological sciences, University of British Columbia in 1987. Steve has been a candidate for a Ph.D. degree in economic geology at the University of Western Australia from 1998 to present. The title of his doctoral study, which is currently under review, is The setting, geometry and timing of intrusion-related hydrothermal systems in the vicinity of the Batu Hijau porphyry copper-gold deposit, Sumbawa, Indonesia. Garwin has 12 years experience as an exploration geologist in Southeast Asia (1987–1999). He has worked in several countries, including Indonesia, Philippines, Thailand, Laos, Malaysia, Myanmar, China, Vietnam, and Papua New Guinea. During the past seven years, he has been employed as a senior geologist for Newmont Mining Corporation. In September 1999, Garwin joined Newmont’s Nevada operations in the role of a consulting (regional) geologist.

RICHARD GOLDFARB has been a research geologist in the Minerals Program of the U.S. Geological Survey in Denver for the past 20 years. During that time, he has been very involved with the Survey’s mineral resource assessment program in Alaska, including serving as the coordinator of geochemical exploration activities in Alaska for many years. He recently authored parts and edited Economic Geology Monograph 9, Mineral Deposits of Alaska. Goldfarb’s main research interests include global gold metallogeny, with an emphasis on the temporal/spatial distribution of deposits; the geology of ore deposits in the North American Cordillera, with emphasis on orogenic gold and collisional tectonics; and the relationship of fluid inclusion/stable isotope applications to the understanding of ore genesis. Goldfarb is also chief editor of Mineralium Deposita, adjunct professor in the Department of Geology at the University of Colorado, and active collaborator at the Centre for Teaching and Research in Strategic Mineral Deposits at University of Western Australia.

ELISEO GONZALEZ-URIEN represents the complex and multifaceted world of metals exploration by large corporations. Gonzalez-Urien, a citizen of the United States and Spain, obtained obtained a B.A. degree in geology from the University of Chile, Santiago, in 1967. He later completed graduate course work at the University of California at Berkeley and the University of Colorado, prior to an unbroken string of exploration assignments worldwide. He has been U.S. Exploration Manager for Noranda Minerals, Exploration Manager for BHP-Utah, and for the past 10 years, was President and CEO of the exploration division of Placer Dome, Inc. He is now a senior advisor to Placer Dome.

DAVID GROVES earned a Ph.D. degree from the University of Tasmania. He holds a Personal Chair in Economic Geology at the University of Western Australia and is Director of the Centre for Strategic Mineral Deposits in the Department of Geology and Geophysics at UWA. He has
published widely on gold deposits, with special emphasis on orogenic gold deposits, particularly Precambrian examples. His major interests are in the development of integrated models for their genesis and the application of these models in computer-based prospectivity analysis and development of exploration targets.

JEFFREY W. HEDENQUIST first worked on a gold deposit in Montana while a student at The Johns Hopkins University. The Au-bearing Archean chemical sediments of the deposit, then thought to have formed by an exhalative process, led him to the hot springs of New Zealand in 1979, supported by a Fulbright fellowship. There he studied the deposit, then thought to have formed by an exhalative process, leading him to the hot springs of New Zealand in 1979, and subsequently completed a Ph.D. degree at UWA in 1993. His Ph.D. work was on the geology and genesis of the Carlin-type gold deposits in the Jerritt Canyon district. He has since been involved in detailed studies of Carlin-type deposits in the Carlin trend, Getchell trend, and Alligator Ridge district and pluton-related gold deposits in the Bald Mountain district. His publications on Carlin-type deposits address topics such as their geochronology and relation to tectonics, mineral paragenesis, alteration, lithogeochemistry, P-T-X and source of ore fluids, chemical modeling of ore formation, and environmental aspects of mining and mineral processing.

ALBERT H. HOFSTRA is a research geologist at the U.S. Geological Survey in Denver, where he has made important contributions to genetic models for Carlin-type gold deposits, mesothermal Ag-Pb-Zn veins, and Mississippi Valley-type Pb-Zn deposits. Hofstra also has developed techniques for the chemical analysis of fluid inclusions and application of these data to studies of ore deposits. His Ph.D. work at the University of Colorado, Boulder, was on the geology and genesis of the Carlin-type gold deposits in the Jerritt Canyon district. He has since been involved in detailed studies of Carlin-type deposits in the Carlin trend, Getchell trend, and Alligator Ridge district and pluton-related gold deposits in the Bald Mountain district. His work has focused on the structure and hydrothermal fluid chemistry of Archean orogenic lode-gold deposits. Recently his research group has started projects on felsic intrusion-hosted gold mineralization, hydrothermal fluid chemistry of ancient VHMS systems, the role of structure and hydrothermal fluids in the enrichment of Fe in BIF-hosted iron ore deposits, and the 4-D connectivity between first, second, and higher order fault zones and associated gold mineralization.

STEFFEN G. HAGEMANN received his M.Sc. degree from the University of Wisconsin-Madison in 1989. His thesis dealt with gold mineralization in the thinned-skinned thrust Brasilia fold belt in central Brazil. In 1993, he obtained his Ph.D. degree from the Key Centre for Strategic Mineral Deposits, University of Western Australia, with a project on the structural and hydrothermal control of the Archean epizonal Wiluna lode gold deposits. After holding a postdoctoral position at the University of Wisconsin-Madison, with brief stints at the University of Toronto and the University of Saskatchewan, he took a position as assistant professor at the Technical University of Munich in 1996. Currently he is a senior lecturer in economic geology at the Centre for Strategic Mineral Deposits, University of Western Australia. His work has focused on the structure and hydrothermal fluid chemistry of Archean orogenic lode-gold deposits. Recently his research group has started projects on felsic intrusion-hosted gold mineralization, hydrothermal fluid chemistry of ancient VHMS systems, the role of structure and hydrothermal fluids in the enrichment of Fe in BIF-hosted iron ore deposits, and the 4-D connectivity between first, second, and higher order fault zones and associated gold mineralization.

JON M.A. HRONSKY works with WMC Resources-Exploration Division as Exploration Manager-Project Generation. In this role, he has global accountability for the early, conceptual stages of WMC’s project generation activities for all ore types and he also maintains a role as WMC technical specialist in the genesis of NiS deposits. Hronsky has a particular interest in the generic aspects of targeting for giant mineral deposits, in particular the influence of lithospheric architecture and geodynamic setting. He graduated from the University of Western Australia school of mines in Kalgoorlie in 1983 and subsequently completed a Ph.D. degree at UWA in 1993. His Ph.D. work was on the Lancefield gold deposit in the northeastern gold fields of Western Australia.

LANCEFIELD gold deposit in the northeastern gold fields of Western Australia.

DAVID HUSTON has undertaken research into the geology and geochemistry of volcanic-hosted massive sulfide deposits from a large variety of terranes and ages over the past 15 years. As part of this research he documented the spatial and mineralogical distributions of gold in VHMS deposits in Paleozoic volcanic belts in eastern Australia, and developed geochemical models to describe the metallogenesis of gold VHMS deposits in general. He has also researched other aspects of VHMS mineralization, including isotope geochemistry, alteration geochemistry, hydrothermal geochemistry, and ore mineralogy. Other interests include Fe oxide-hosted Cu-Au deposits, lode Au deposits, low-sulfidation epithermal deposits, high-sulfidation Cu-Au deposits, and Archean metallogeny. He is presently working on the metallogenesis of the Pilbara craton.
ERIC JENSEN received a B.A. degree in geology in 1993 from Carlton College, and worked as a “paraprof” in the geology department at Colorado College from 1993 to 1994. After studying economic geology at Stanford University in 1994–1995, he worked as a mine geologist and exploration geologist for the Cripple Creek and Victor Gold Mining Company. He is currently completing his Ph.D. degree at the University of Arizona. His present research is focused on the petrology, geochemistry, and styles of mineralization associated with alkaline magmatism, and he works part-time for Anglogold North America at their operations in Cripple Creek, Colorado.

ROB KERRICH graduated from Imperial College with a Ph.D. degree, then pursued postdoctoral studies at the University of Western Ontario, advised by Bill Fyfe, and at the California Institute of Technology. Since then he has taught geology, first at the University of Western Ontario, and since 1986, he has been at the University of Saskatchewan. Kerrich has established stable isotope, fluid inclusion, and ICP-MS labs, and has applied these analytical techniques to a variety of questions in earth sciences. His interests are geoepidemiology, metallic mineral resources, geodynamics, fluid-rock interaction, and plume geochemistry.

JONATHAN D.M. LAW graduated from the University of the Witwatersrand in 1991 with an M.Sc degree, focusing on alteration and mineralization in the Welkom gold field of the Witwatersrand basin. Subsequently, he worked in the Witwatersrand exploration and mining industry for 10 years. In the early 1990s, the Gencor group undertook a major research project to evaluate the regional geologic framework of the Witwatersrand basin. Law was the coordinator of the program on alteration and mineralization, and the regional scope of this work provided the opportunity to link data sets from many mines around the basin with mapping, seismic studies, and exploration databases. Ongoing work with Neil Phillips led to the development of the hydrothermal replacement model for the mineralization. He has subsequently been involved in the evaluation of various geologic terranes, and specifically, the exploration potential of sedimentary basins.

CAM McCUAIG is a Senior Associate with SRK Consulting based in Perth, Western Australia, and is Geology Manager-Western Australia. He obtained his B.Sc. (hons.) degree from Lakehead University, Ontario, and his Ph.D. degree from the University of Saskatchewan. His Ph.D. thesis addressed the genesis of orogenic gold deposits. Joining Etheridge Henley Williams as a consultant in 1995, McCuaig has remained with the company through its merger with SRK Consulting. His role largely consists of translating academic research on ore deposits into practical applications in industry. With more than 12 years experience in understanding ore deposits, McCuaig has been invited to speak and provide short courses at many international conferences, and to provide training to industry clients on aspects of structural geology, hydrothermal alteration, orebody genesis and practical applications of geology to the exploration and mining industry. His international experience includes gold projects in Australia, Africa, Asia, Europe, North America, and South America, ranging from Archean through Proterozoic to Phanerozoic in age.

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RAINER NEWBERRY received B.S. degrees in chemistry and in geology from Massachusetts Institute of Technology (M.I.T) in 1975, and M.S. (1978) and Ph.D. (1980) degrees in geology from Stanford University. He has taught at the University of Alaska since 1982, where he is professor of economic geology; he teaches a wide range of undergrad and graduate classes. Newberry works with the U.S. Geological Survey and Alaska State Survey in regional and deposit-scale mapping in Alaska and follow-up analytical studies. He and his graduate students have studied a wide variety of deposits in Alaska, including skarn, VMS, sedex, orogenic vein, greisen, porphyry, magmatic, and reduced intrusion-related deposits.

GREG PARTINGTON is currently the General Manager Exploration for Ross Mining N.L., responsible for managing all exploration at all the company mine sites in Australia and the Pacific. He received a Ph.D. degree from the University of Western Australia, where he still holds an honorary associate research position. He has worked for several mining and exploration companies in Northern Australia and has experience in exploration for gold, tin, tantalum, and platinum. During this time, he has been involved in research on structural controls on Archean and Proterozoic gold mineralization and mineralization related to pegmatites and granites. He has published more than 30 papers related to this research. Other interests include the use of GIS and prospectivity modeling in exploration.
G. NEIL PHILLIPS is a graduate of Melbourne University and Monash University and has dual experience in academia and the exploration industry. He joined the staff of the University of the Witwatersrand in 1985; while there he led research projects on all operating gold mines. His research has been supported by the major Witwatersrand mining companies and the Chamber of Mines of South Africa, which has meant virtually unrivalled access across the basin. This work has led to a fundamental reassessment of post-depositional processes in the Witwatersrand basin and to the development of the hydrothermal replacement model for the mineralization. His experience in Archean greenstone and slate belt gold provinces has been a key contributor to unraveling the postdepositional history of the Witwatersrand. More recently, Phillips has been inaugural Professor of Economic Geology in Townsville and Director of the National Key Centre In Economic Geology. He is currently working with Jonathan Law in the Australian exploration industry to combine the new Witwatersrand genetic model with a global assessment of sedimentary basins to evaluate the potential for “Witwatersrand-style” mineralization.

JOHN R. RIDLEY is lecturer in ore deposit geology, geochemistry, and metamorphic geology at the Department of Earth and Planetary Sciences, Macquarie University, Australia. He received a Ph.D. degree from Edinburgh University for work on structural and metamorphic geology, and has subsequently worked in Switzerland, Norway, Zimbabwe, and Australia. His recent research work has been on the genesis of hydrothermal ore deposits, in particular gold deposits, and on more general questions of hydrothermal fluid flow in the crust.

RICHARD H. SILLITOE graduated from the University of London, England, where he went on to obtain a Ph.D. degree in economic geology in 1968. After spending time with the Geological Survey of Chile, he has worked for the last 30 years as an independent consultant for mining companies, international agencies, and foreign governments. Assignments have involved a wide variety of base and precious metal deposits and prospects in 75 countries worldwide, with specialization in the porphyry copper and epithermal gold environments. He was president of SEG for the year 1999–2000.

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