

CURRICULUM VITAE

Name: John Charles Priscu

Birthdate: September 20, 1952

Citizenship: U.S.A.

EDUCATION:

Ph.D., Ecology (Microbial), Univ. of California, Davis, 1982

M.S., Biology (Limnology), Univ. of Nevada, Las Vegas, 1978

B.S., Biology (minor music), Univ. of Nevada, Las Vegas, 1975

PROFESSIONAL EXPERIENCE:

Senior Research Scientist, 2022-2023. Polar Oceans Research Group. Sheridan, MT.

Regents Professor of Ecology Emeritus, 2022-present.

Regents Professor of Ecology, 2016-2021. Department of Land Resources and Environmental Sciences, Montana State University.

Professor of Ecology, 2000-present. Department of Land Resources and Environmental Sciences, Montana State University.

Professor of Ecology. 1994-2000. Department of Biological Sciences, Montana State University.

Associate Professor of Ecology. 1988-1994. Department of Biological Sciences, Montana State University.

Assistant Professor of Ecology. 1984-1988. Department of Biological Sciences, Montana State University.

Mars Ice Core Working Group for a proposed 2030 mission that will place astronauts on the surface of Mars to collect ice cores and return them to Earth. 2020-2021.

Probe Using Radioisotopes for Icy Moons Exploration (PRIME) science team member. Objectives are to enable a flight mission to the ocean worlds in the outer Solar System by the end of the decade 2023-2032. 2020-2024.

Contamination Control and Planetary Protection Working Group (CCPPWG) for the Mars 2020 sample return mission. 2016-2019.

Scientific Organizing Committee. Biosignatures for Extant Life on Ocean Worlds. 2016-present.

Chairperson, NSF-funded McMurdo Dry Valleys Environmental workshop. June 2016.

Executive Committee, WAIS Divide Ice Coring Project. 2008-2015.

Chief Scientist, Subglacial Antarctic Lake Scientific Access (SALSA) project. 2016-2019.

Executive Committee/Chief Scientist, Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project. 2009-present.

Co-Director. 2007-present. Subzero Research Facility, Montana State University.

Co-Director. 2011-2018. Center for Astrobiology. Montana State University.

Advisory Committee, Korean Polar Research Institute (KOPRI) on subglacial lake research. 2015-present.

Search Committee for the Editor-in-Chief of the AGU publication JGR-Biogeosciences. 2008-2009.

Polar Research Board-National Academy of Science. 2009-2012.

Co-Chair. National Academy of Sciences NRC Committee. “Frontiers in Understanding Climate Change and Polar Ecosystems”. 2011.

Committee on the Origin and Evolution of Life -National Academy of Science. 2008-2011.

Editorial Board. Astrobiology. 2006-present.

Chair, SCAR-SALE (Subglacial Antarctic Lake Environments) International Scientific Planning Group. 2000-2009.

Co-chair of the scientific international organizing committee for the SCAR Open Science Conference, August 2010, Buenos Aires, Argentina, August 2010.

Organizing Committee, Subglacial Antarctic Lake Exploration (SALE) Advanced Science and Technology Workshop, April 24-28, 2006. LGGE, Grenoble France

Instructor “Limnology in High Alpine Lakes” University of Innsbruck, Austria. July 2000.

Project Leader (Principal Investigator), Antarctic Research Teams. 1984-present.

Organizing Committee, NSF funded FASTDRILL workshop. October 2002.

Organizing Committee, American Society of Limnology and Oceanography winter meeting, Salt Lake City. February 2003.

National Science Foundation Office Advisory Committee for the Office of Polar Programs. 2000-2002.

National Science Foundation Advisory Committee for Environmental Research and Education 2000-2002.

United States Biology representative to the Scientific Committee of Antarctic Research (SCAR). 2000-2006.

Convener for the international Group of Specialists to plan the exploration of Lake Vostok and other subglacial lakes. 2000-2006.

National Academy of Sciences NRC Committee “Frontiers in Polar Research”. 2002-2003.

National Academy of Sciences NRC Committee “Forward Contamination of Mars” 2004-2006.

United States Ice Core Working Group member. 2002-2008.

Advisory Committee for the United States Ice Core Drilling Services. 2002-2008.

Participant and rapporteur. American Society of Limnology and Oceanography/NSF funded workshop on Emerging Issues in Limnology. Boulder, CO. December 2002.

Review Committee, Public Radio Documentary Series “The DNA Files”. 2000-2001.

Sponsor for the NASA Planetary Biology Internship Program. 2000-present.

Sponsor for NASA GSRP and Space Grant Consortium students. 1997-present.

Sponsor for NASA Montana Space Grant Consortium students. 1996-present.

Team member, Lake Baikal, USSR expedition, July-August, 1990. Funded by the National Geographic Society.

Team member, International expedition to study the physics, chemistry and biology of southern Patagonian lakes, March 1992. Funded by German Government.

Editorial Board, American Geophysical Union, Antarctic Research Series. 1993-2002.

Editorial Board, Limnology and Oceanography. 1988-1991.

NSF Review Panel, Division of Polar Biology and Medicine 1990, 1993.

NSF Review Panel, Life in Extreme Environments (LEnEn) Program 1999.

Chairperson, McMurdo (Antarctica) Area Scientific Users Committee 1995-present.

Organizing Committee and Working Group Chairman, Environmental Management Workshop on the McMurdo Dry Valleys (Antarctica). 14-17 March 1995, Santa Fe, New Mexico. Funded by NSF.

Priscu, J.C. (Chairperson) Year-round access to the McMurdo Region: Opportunities for science and education. Report of a workshop held between 8 and 10 September 1999, Arlington Virginia.

Biological Cruise Leader. Cruise II-87, USCG Icebreaker "Polar Sea", February 1987. This cruise examined the influence of nutrients on phytoplankton C and N metabolism off the Ross Ice Shelf, Antarctica. Funded by NSF Division of Polar Programs.

Adjunct Research Professor. University of Southern California Biological Oceanography Program in conjunction with NASA, 1986-1987. Research topic: Influence of environmental variables on nitrogen enzymology in Antarctic sea-ice microalgae. Funded by NSF Division of Polar Programs.

Adjunct Research Professor. University of Southern California Biological Oceanography Program, 1985-1986. Research topic: Physiology of Antarctic Sea-Ice Microalgae: Changes in Photosynthetic Metabolism During the Course of a Spring Bloom. Funded by NSF Division of Polar Programs.

Adjunct Research Professor. Department of Biological Sciences, University of Nevada, Las Vegas. 1984.

Research Scientist. New Zealand Antarctic Research Program. 1984-1985. Research topic: Carbon and Nitrogen metabolism of Antarctic stream and lake ecosystems. Funded by an NSF International Programs grant and a grant from the New Zealand Government.

Staff Research Scientist. 1982-1984. Division of Marine and Freshwater Science, Taupo Research Laboratory, Division of Scientific and Industrial Research, New Zealand.

Research Scientist. Cruise 1144 of RV Tangaroa, New Zealand government research vessel. 1983. Objectives: To define the importance of upwelled nitrate to phytoplankton productivity in the eastern Tasman Sea.

Leader-Primary Productivity Section: Workshop on biological production off the west coast of New Zealand. Wellington, New Zealand. Oct. 1983.

Director, Chem-Pro Consultants, Inc. 1979-Present. Environmental research in aquatic systems.

Research Assistant-Field Director, Castle Lake Research Group, Univ. of California, Davis. 1979-1981. Maintenance and operation of the Castle Lake field station and supervision of routine limnological data collection and analysis.

Instructor. 1980. Limnology laboratory, Univ. of California, Davis.

Instructor. 1978. "Ecology of a Desert Pond: Adult education course organized through the Continuing Education Department of the Univ. of Nevada, Las Vegas.

Research Associate. 1976-1978. Supervisor of field collection and analysis of routine limnological data from Lakes Mead and Mohave (Colorado River), in conjunction with the U.S. Bureau of Reclamation and the Univ. of Nevada, Las Vegas.

Research Assistant. 1976-1978. The quantification of chlorophyll in water bodies utilizing remote laser sensing. The research was in conjunction with the U.S. Environmental Protection Agency and the Univ. of Nevada, Las Vegas.

Research Assistant. 1975-1977. The effects of sewage effluent from Las Vegas Wash on water quality in Lake Mead, in conjunction with Clark County Sanitation District No. 1, Waste Treatment Physical Development Section and the Univ. of Nevada, Las Vegas.

Research Assistant. 1975. Biological control of the encephalitis mosquito Culex tarsalis. The research was in conjunction with the Clark County, Nevada Vector Control Program and the Univ. of Nevada, Las Vegas.

Teaching Assistant. 1975. General Zoology and Human Ecology. Univ. of Nevada, Las Vegas.

Research Assistant. 1974. Evaluation of the proposed Alton Coal-Slurry Pipeline on the fauna of the Moapa River, Utah-Nevada, in conjunction with Engineering Management, Inc. and the Univ. of Nevada, Las Vegas.

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

The American Society of Limnology and Oceanography
American Association for the Advancement of Science
American Society for Microbiology
American Geophysical Union

MAJOR AREA OF RESEARCH:

Aquatic Ecosystem Ecology
Biogeochemistry of icy environments
Microbial Ecology/Physiology/Geomicrobiology
Life in Extreme Environments
Climate Change
Astrobiology

SELECTED INVITED LECTURES:

2023. Invited Lecture. "Geobiology of Antarctic Subglacial Environments: A historical perspective". Department of Earth, Atmospheric, and Planetary Sciences. Massachusetts Institute of Technology. 5 December 2023.

2023. Honorary Guest. International conference on *Chlamydomonas priscuii*. University of Miami, OH. 11-16 June 2023.

2023. Invited presentation. The influence of stream and internal diffusive nutrient loads on trophogenic zone primary productivity in Lake Fryxell, Antarctica. SCAR Biology Conference. Christchurch New Zealand. 31 July-4 August 2023.

2022. Plenary Speaker. IPICS-OSC Conference. “Geobiology of Ice Cores”. Crans-Montana Switzerland. 2-7 October 2022.

2022. Invited Speaker, Society of International Limnology “ Stream and internal diffusive nutrient loads to trophogenic zone primary productivity in Lake Fryxell, Antarctica “ 7-10 August 2022. Berlin, Germany.

2021. Plenary Speaker. Korean Office of Polar Research annual meeting. Seoul, Korea. September 2021.

2020. Plenary Speaker. IEEE-Aerospace Conference. “The Hidden World Beneath the Antarctic Ice Sheet”. 8 March 2020.

2019. Invited Speaker. Earth and Planetary Sciences Colloquium, Harvard University. “The Microbiological World In and Beneath Polar Ice Sheets”. 2 December 2019. Cambridge, MA

2019. Invited Speaker for the 60th Anniversary of the Microbiology Society of Korea. “Geomicrobiology of Antarctic Subglacial Lakes”. April 16, 2019. Jeju Island, Republic of Korea.

2018. Invited Speaker for the 24th International Symposium on Polar Sciences, “30 years of footsteps in Antarctica: Looking back and looking forward”. May 15-16, 2018. Korea Polar Research Institute, Incheon, Republic of Korea

2018. Invited speaker and session organizer. Carbon fluxes in permanently ice-covered lakes. 34th Society of International Limnology Congress, Nanjing, China (19-24 August 2018).

2017. “Limnology beneath the Antarctic Ice Sheet”. Stout Lecture, Earth and Atmospheric Sciences, University of Nebraska, Lincoln. 29 September 2017.

2017. National Academy of Science, Washington, DC. “Contamination issues with the collection of deep ice cores as it relates to the Mars 2020 sample return mission”. 2 August 2017.

2017. “What can we learn from deep ice cores on our planet?” Grand opening of the University of Alberta ice core repository. 24 March 2017. Edmonton, CA.

2017. “The Hidden World Beneath Earth’s Polar Ice Sheets”. Herrington STEM lecture. The State University of New York at New Paltz. 28 February 2017.

2016. “Geomicrobiology in and below the Antarctic Ice Sheet”. NASA Ocean Worlds workshop II. Woods Hole, MA. 25 August 2016.

2016. “The hidden world beneath the Antarctic Sheet”. Bringing the University to You lecture series. MSU-Great Falls. 14 January 2016.

2016. “Depositional dynamics in northern and southern Himalayan glaciers. 6 January 2016. Sorcerer Lodge, Golden, Canada.

2015. “The Microbial Habitability of Extraterrestrial Icy Worlds: A View From Earth based on Antarctic Subglacial Environments”. NASA Ocean Worlds workshop I. National Geographic Society, Washington, DC. October 2015.
2015. “Life in glacial ice”. The Institute of Tibetan Plateau Research (ITP), Chinese Academy of Science. Lhasa, Tibet. 17 July 2015.
2015. “Antarctic subglacial lakes as models for life on Europa: An example from Subglacial Lake Whillans. Jet Propulsion Laboratory, Pasadena, CA. 16 November 2015.
2015. “Methane transformations in polar lake ecosystems”. 6th International Conference on Polar and Alpine Microbiology České Budějovice, Czech Republic. 6-9 September 2015.
2015. “Long term trends in phytoplankton productivity in McMurdo Dry Valley (Antarctica) lakes”. Ecological Society of America annual meeting. Baltimore, Maryland. 13 August 2015.
2015. “Aquatic ecosystems of the McMurdo Dry Valleys, Antarctica”. McMurdo Dry Valleys LTER annual science meeting. 27-30 August 2015. Baton Rouge, LA.
2015. “Antarctic subglacial lake exploration: first results and future plans”. Philosophical Transactions of the Royal Society A. “Chicheley Hall, UK. 29 March 2 April 2015.
2014. Provost Distinguished Lecture. Montana State University. 1 April 2014.
2014. “The McMurdo Dry Valleys Long-Term Ecological Research Project: Twenty One Years of Research Addressing Ecosystem Processes in a Changing Climate”. 20th International symposium of Polar Sciences: Our Collective Journey to Connect the Past and Future from the Antarctic. 27-29 May 2014. Songdo, Incheon, Republic of Korea.
2014. “Microbial Habitability of Icy Worlds”. Physics Colloquia, Astrobiology seminar. 20 May 2014. University of Washington.
2014. “Geomicrobiology of subglacial Lake Whillans, Antarctica”. Chinese-Deutsch. Symposium: “Ice-covered Aquatic Systems in the Changing Climate”. Aaiyuan University of Technology, Taiyuan, China. 13-18 April 2014.
2014. “The First Glimpse of Life Beneath the Antarctic Ice Sheet”. Provost Lecture. Montana State University. 1 April 2014.
2014. “The Potential for Life on Titan and Europa”. Physics Colloquium. Montana State University. 4 April 2014.
2013. “Why study Earth’s polar regions?” Beijing, China. July 2013.
2013. “The hidden world beneath our polar ice sheets”. TedX, Bozeman. March 2013.
2012. “Is there a Deep Icy Biosphere?” Center for Dark Energy Biosphere Investigations annual science meeting. Marina, CA. November 2012.

- 2012." Life on Other Icy Worlds". Clark Forum on Contemporary Issues. Dickinson College, Carlisle, PA. October 2012.
2011. "Restless Earth: Life on the Edge". Dasan Conference, S. Korea. November 2011.
2011. "Beyond Polar Bears and Penguins: What Lies Beneath Our Planets Ice Sheets?" Hydrology Colloquium, University of Nevada, Reno. 11 February 2011.
2010. "What Lies Beneath Our Planets Ice Sheet?" Distinguished Lecturer in the Department of Microbiology at Miami University. 10 February 2010.
2009. "Earth's polar regions as models for the microbiology of other frozen worlds". Plenary lecture. American Society of Microbiology. Philadelphia 18-22 May 2009.
2008. "The lost world beneath the Antarctic Ice Sheet". POP-Tech 2008. Camden, Main. 24 October 2008.
2008. "What does polar science tell us about the evolution of life?" Green Lecture. IBM. 10 October 2008, Palo Alto, California.
2008. "Subglacial Lakes and Rivers: Diversity in the cold". Third International Conference on Polar and Alpine Microbiology. 11-15 May, Banff, Canada.
2008. "Beyond Polar Bears and Penguins: What Can We Learn from Polar Science?" University of Nevada, Las Vegas-2008 BIOS Lecture. 11 April 2008.
2007. Earth's Deep Cold Biosphere" Philip Hauge Abelson Advancing Science Seminar (Emerging Polar Frontiers) sponsored by the American Association for the Advancement of Science (AAAS). October 2007, Washington, DC.
2007. How Are Our Poles Changing?" Manion Lecture. Carroll College, Helena, Montana. 11 April 2007.
2007. "Climate and Ecosystem Response in Earth's South Polar Regions". University of Alberta, Canada and the Ecosystem Research Institute, Alberta. April 2007.
2007. "What Can We Learn from Our Polar Regions". Madrid, Spain. Funded by Fundacion la Caixa; Cosmo Caixa (National Museum of Spain). April 2007.
- 2006.
2006. "Icy Earth as a Model for Extraterrestrial Ecology". University of California, Davis. October. 2006.
2006. "Subglacial Lake Exploration: From a Curiosity to Focus for Scientific Research. SCAR XXIX Open Science Conference, Hobart, Tasmania, 12-14 July 2006.
2006. "Life on Mars and Europa". Astrobiology Science Conference. Washington, D.C. March 2006.
2006. "Subglacial Microbial Systems". International Society of Microbial Ecology. Vienna, Austria. August 2006.
2006. Japanese National Institute of Polar Research, Tokyo, Japan. Three lectures presented on life in and under permanent ice sheets. February 2006.
2005. "Life in the Wrong Places: Microorganisms in Icy Environments", Meeting of the international society of subsurface microbiology. Jackson Hole, Wyoming. August 2005.

2005. "Earth's Icy Biosphere" C.B. van Niel Memorial Lecture, Stanford University, Hopkins Marine Station. 20 May 2005.
2004. "A High School Education Plan About Living Ice" Murdock Trust Lecture; Partners in Science National Conference for High School Teachers, San Diego, CA. 16-17 January 2004.
2004. "Live in a Deep Freeze" University of Southern California. 10 February 2004.
2004. "Are Earth's Ice Caps Alive?". Canadian Society of Microbiology, national meeting. Edmonton, Canada. 20-23 June 2004.
2004. "Pond Water Popsicles". Lecture to the National Science Teachers Association. 8 July 2004. Big Sky, Montana.
2004. "Antarctic Subglacial Lakes". Water and Ice, 20th Anniversary Symposium, Swiss Committee on Polar Research, 18 September 2004. Bern, Switzerland.
2004. "Earth's Icy Biosphere", Utah State University. 26 January 2004
2002. "Perennial Antarctic Ice: An Oasis for Life in a Polar Desert and a Model for Other Icy Worlds". Russian Astrobiology Center, St. Petersburg, Russia. March 2002.
2001. "Is there a Deep-Cold Biosphere?". AAAS annual meeting. 15-20 February, San Francisco, California.
2001. American Society of Microbiology "Life in Extremely Cold Environments". 20-24 May, Orlando, Florida.
2001. "What Can We Learn from Polar and Alpine Ecosystems". D.E. Laudénbach Lecture. Univ. of Western Ontario. 2 April 2001.
2000. "Perennially Ice-Covered Antarctic Lakes: Oases for Life and Models for Other Icy Worlds". Geosciences lecture series, Princeton University, New Jersey. May 2000.
1999. "Physical, Chemical and Biological Conditions in Deep Subglacial Ice: Evidence for Life in Lake Vostok, Antarctica". Cambridge University, England. October 1999.
1985. "Antarctic Lakes and Streams: Cold Desert Ecosystems". Sigma XI Research Society. Univ. California, Davis.

HONORS, AWARDS, SERVICE:

2022. Bill and Betty Rockwell Award. This award was presented by LightHawk, an international aviation-based non-profit conservation group based in Colorado. The award recognizes a volunteer pilot who has donated his time and aircraft towards environmental conservation.
2022. Awarded the title of Emeritus Regents Professor of Ecology.
2021. The Antarctic lake psychrophilic phytoplankton *Chlamydomonas priscaii* named.
2020. The Antarctic lake psychrophilic bacterium *Psychrobacter priscaii* LFX-15B named.

2021-2023. Featured scientist in the feature length science documentary “Lake at the Bottom of the World”. The film documents the logistical and scientific efforts of the NSF-funded “Subglacial Antarctic Lakes Access” (SALSA) project that was led by J. Priscu.

2020-2021. NASA Tiger Team: Assessment of Ice Core Attributes and Their Impact on Scientific Research Potential—translate the objective of obtaining meaningful Mars ice cores into engineering requirements to provide to the mission designers.

2020. Chinese Academy of Sciences President’s Fellowship for Distinguished Scientists.

2018-2019. NASA Contamination Control and Planetary Protection Working Group (CCPPWG)—work with Mars 2020 Lander scientists and engineers on coring science requirements and associated contamination control. On the cores to be collected by the Mars 2020 Lander.

2017. Sustaining Fellow; The American Society of Limnology and Oceanography.

2016. Certificate of Appreciation for leadership of the Subglacial Antarctic Lake Environments (SALE) Scientific Research Program. Awarded by the Scientific Committee on Antarctic Research (SCAR), August 2016.

2016. Regents Professorship, Montana State University.

2015. Organized an international workshop on environmental stewardship on the McMurdo Dry Valleys. 1-3 May 2015, Ft. Collins, CO.

2015. Organizing Committee. Conference on Antarctic subglacial lake exploration. Theo Murphy meeting, Chicheley Hall, UK. 30-31 March 2015.

2015. Organizing Committee, 6th International Conference on Polar and Alpine Microbiology. 6-10 September 2015. České Budějovice, Czech Republic.

2014. E.O. Wilson biodiversity and technology pioneer award for seminal discoveries on Antarctic microbial life and the advocacy and public outreach of biodiversity. Presented by E.O. Wilson, October 2014.

2013. Organized and chaired the 5th International Conference on Polar and Alpine Microbiology. 8-12 September 2013, Big Sky, Montana.

2012. International Excellence in Antarctic Science award from the Scientific Committee on Antarctic Research (SCAR).

2012. Featured Scientist. National Public Radio live broadcast -February- “Science Friday” with Ira Flatow.

2010. Fellow of the American Geophysical Union (AGU).

2008. Invited Essay by the National Science Foundation addressing Darwin’s influence on polar regions. “Origin and Evolution of Life on a Frozen Earth” http://www.nsf.gov/news/special_reports/darwin/

2006. Fellow of the American Academy for the Advancement of Science (AAAS).

2004. A Valley in Antarctica named for research in Antarctica. Description follows: Priscu Valley. Antarctic I.D. 18658. 772900S 1604700E. An upland ice-free valley on the E side of Prentice Plateau in Olympus Range. The valley opens N to the head of McKelvey Valley. Named by US-ACAN (2004) after John C. Priscu, Department of Biological Sciences, Montana State University, Bozeman, MT; USAP investigator in the McMurdo Dry Valleys, 1984-2002.

2004. Nominated and accepted membership to the World Water and Climate Network (WWCN) as their advisor on Antarctic water bodies.

2004. BBC Radio interview "The Lost World", 19 January 2004.

2003. Richard P. Goldthwaite Award. Presented by the Byrd Polar Research Center for novel research in glaciology.

2000. Featured Scientist. BBC-Discovery documentary: "The Lost World: Lake Vostok".

2000. Featured Scientist. National Public Radio live broadcast -February- "Science Friday" with Ira Flatow.

1996. Robert and Nora Wiley award for meritorious research. Presented by the Montana State University Foundation.

1998. A first order stream named for research in Antarctica. Description follows: Priscu Stream. Antarctic I.D. 17354. 773900S 1624500E. Meltwater stream, 3,000 m long, flowing SW from SE end of Lacroix Glacier to the NE end of Lake Bonney in Taylor Valley, Victoria Land. Named by US-ACAN in 1996 after John C. Priscu, ecologist, Montana State University; principal investigator from 1984 on numerous studies of marine and freshwater systems in the McMurdo region and the author of numerous papers on the ecology of this area; led first WINFLY expedition (1991) into the McMurdo Dry Valleys.

1989. Alexander von Humboldt Foundation research scholarship to study at the Limnology Institute, University of Constance, Germany.

1989. Fulbright Foundation research scholarship to study at the Limnology Institute, University of Constance, Germany. Declined.

1987. Invited participant in the National Science Foundation sponsored workshop "Complex Ecological Interactions in Freshwater Ecosystems", held at the University of Notre Dame, March 1987.

1987. Antarctic service medal from the Secretary of the Navy for field exploration in Antarctica.

1987. Antarctic service medal from the National Science Foundation for scientific exploration in Antarctica.

1979. Jastro-Shields Research Scholarship, Univ. of California, Davis.

1976, 1977. Selected to participate in research on the natural history of Baja, Mexico. Sponsored by the Univ. of Nevada, Las Vegas Biology and Geology Departments.

1975. Continuing education scholarship from the Univ. of Nevada to study the natural history of the Grand Canyon.

1975. Continuing education scholarship from the Univ. of Nevada to study the migration and mating patterns of the Gray Whale and Elephant Seal along the west coast of Baja, Mexico.

1972-1976. Captain, University of Nevada Las Vegas, soccer team.

1976-1978. Captain, Vegas United semiprofessional soccer team.

SCIENTIFIC PRESENTATIONS

Over 300 oral presentations and posters presented at national and international meetings since 1985.

SCIENTIFIC PUBLICATIONS:

Books:

Mars Ice Core Working Group (2021), First Ice Cores from Mars, co-chairs: M.R. Albert and M. Koutnik, 74 p. white paper.

Priscu, J.C. (editor) 2016. "Environmental Assessment of the McMurdo Dry Valleys: Witness to the Past and Guide to the Future". 60 pages.

Grebmeier, J. and J.C. Priscu (co-chairs). 2011. *Frontiers in Understanding Climate Change and Polar Ecosystems*. Committee on Frontiers in Understanding Climate Change and Polar Ecosystems Polar Research Board Division of Earth and Life Studies. The National Academies Press, 86 pp. ISBN-10: 0-309-21087-9.

Chyba, C. et al. 2005. *Prevention of the Forward Contamination of Mars*. The National Academies Press, Washington D.C. 167p.

Detrich, H.W., J.W. Deming, C. Fraser, J.T. Hollibaugh, W.M. Mohn, J.C. Priscu, G.N. Somero, M.F. Thomashow and D. H. Wall. 2003. *Frontiers in Polar Biology in the Genomic Era*. The National Academies Press, Washington D.C. 166p.

Priscu, J.C. (oversight editor). 2003. *Biogeochemistry of the Ross Sea*. Vol. 78. American Geophysical Union, Washington, DC. 358p.

Priscu, J.C. (editor) 1998. *Ecosystem Dynamics in a Polar Desert: the McMurdo Dry Valleys, Antarctica*. Vol 72. American Geophysical Union, Washington, DC. 369 pp, includes CDROM.

Priscu, J.C. (oversight editor). 1998. *Sea Ice Microbial Communities*. Vol. 73. American Geophysical Union, Washington, DC. 198 pp.

Priscu, J.C. (oversight editor). 1996. Foundations for Ecosystem Research: The Palmer Peninsula, Antarctica. Vol. 70. American Geophysical Union, Washington, DC. 448 pp.

Refereed–Journal Articles:

Šabacká, M. and J.C. Priscu. Spatial distribution of microorganisms in the McMurdo Dry Valleys, Antarctica. *Polar Biology*. In Prep.

Šabacká, M., J.C. Priscu, D. McKnight, D.H. Wall, J. E. Barrett and R.A. Virginia. Aeolian and fluvial fluxes of carbon and nitrogen among landscape units in Taylor Valley, Antarctica. *Environmental Research Letters*. In Prep.

- Li, W., A. Chiuchiolo, C. Takacs-Vesbach, R. Morgan-Kiss and J. C. Priscu. 2021. Flux of particulate organic matter to the sediments of Lake Bonney, A permanently ice-covered Antarctic lake. ISMS Journal. In Prep.
- Wu, Naicheng and John C. Priscu. The influence of climate on the productivity of a permanently ice-covered Antarctic lake. In prep.
- Hwang, Kyuin, Hanbyeol Lee, Soyeon Kim, Ahnna Cho, Christina Davis, Brent Christner, John Priscu, Kyung Mo Kim, and Ok-Sun Kim. Ancient microorganisms establish complex metabolisms in Antarctic subglacial environments. In Prep.
- Li Wei, D. M. Robinson, M. Breitbart, C. Takacs-Vesbach, J. C. Priscu. Genomic and Metabolic Diversity of Viral Populations Beneath the West Antarctic Ice Sheet. In prep for Nature Communications Biology.
- Campbell, T., M. L. Skidmore, J. Winans, R. Zook, J.C. Priscu and the SALSA Science Team. Implications for sub-ice stream accretionary processes and conditions from the Basal Ice Layer of the Mercer Ice Stream, West Antarctica. In prep for J. Glaciology.
- Campbell, T., M. L. Skidmore, M. O. Patterson, J. E. Dore, D. M. Harwood, A. Leventer, A. Michaud, B. E. Rosenheim, M. R. Siegfried, A. Steigmeyer, M. Tranter, R. A. Venturelli, J. C. Priscu, and the SALSA Science Team. Mercer Ice Stream subglacial lake sediments reveal an archive of dynamic subglacial hydrologic conditions. GSA Bulletin. Submitted.
- Turetta, Clara, Elena Barbaro, Mark L. Skidmore, Andrea Gambaro, Alexander B. Michaud, Andrew C. Mitchell, Trista J. Vick-Majors, John C. Priscu and Carlo Barbante. 2023. Trace element, rare earth element and organic compounds in Subglacial Lake Whillans, West Antarctica. Science and the Total Environment. 892: 20 September 2023, 164480
- Michaud, Alexander, B., John C. Priscu. 2023. Sediment oxygen consumption in Antarctic subglacial environments. Limnology and Oceanography. Limnol. Oceanogr. 9999, 2023, 1–10
<https://doi.org/10.1002/lno.12366>
- Venturelli, Ryan. A., Christina Davis, Brenna Boehman, Brent Christner, Helen Amanda Fricker, Valier Galy, Chloe Gustafson, David Harwood, Amy Leventer, Alex Michaud, Cyrille Mosbeux, John C. Priscu, Matthew Siegfried, Trista J. Vick-Majors, B. E. Rosenheim and the SALSA Science Team. 2023. The origin, age, and cycling of carbon in an Antarctic Subglacial Lake. AGU Advances, 4, e2022AV000846. <https://doi.org/10.1029/2022AV000846>
- Davis, Christine, L., Ryan A. Venturelli, Alexander B. Michaud, Jon R. Hawkings, Amanda M. Achberger, Trista J. Vick-Majors, Brad E. Rosenheim, John E. Dore, Mark L. Skidmore, Joel D. Barker, Liane G. Benning, Matthew R. Siegfried, John C. Priscu, Brent C. Christner, and the SALSA Science Team. 2023. Biogeochemical and historical drivers of microbial community composition and structure in sediments from Mercer Subglacial Lake, West Antarctica. ISME Communications, 3, 8. <https://doi.org/10.1038/s43705-023-00216-w>
- Siegfried, Matthew R., Ryan A. Venturelli, Molly O. Patterson, William Arnuk Timothy D. Campbell, Chloe D. Gustafson, Alexander B. Michaud, Ben Galton-Fenzi, Mark B. Hausner, Stephanie N. Holzschuh, Bruce Huber, Kenneth D. Mankoff, Dustin M. Schroeder, Paul Summers, Scott Tyler, Sasha P. Carter, Helen A. Fricker, David M. Harwood, Amy Leventer, Brad E. Rosenheim, Mark L. Skidmore, John C. Priscu and the SALSA

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Spigel, R.H., I.V. Sheppard and J.C. Priscu. 1990. Temperature and fine structure from Lake Bonney. *Antarctic Journal of the United States* 25:228-229.

Priscu, J.C., A.C. Palmisano, C.W. Sullivan and L.R. Priscu. 1987. The effect of temperature on inorganic nitrogen and carbon metabolism in Antarctic sea-ice microalgae. *Antarctic Journal of the United States*, 1987 Review Issue.22:196-198.

Priscu, J.C. 1987. Environmental factors regulating the dynamics of blue-green algal blooms in Canyon Ferry Reservoir, Montana. Final report to the Montana Water Resources Research Institute. 158 p.

Priscu, J.C., L.R. Priscu, C.W. Sullivan and A.C. Palmisano. 1987. A comparison of neutral lipid content among sea-ice microbial communities in McMurdo Sound, Antarctica. *Antarctic Journal of the United States*, 1987 Review Issue 22:191-193.

Priscu, J.C. and A. Palmisano. 1986. Contribution of carbon fixed by nitrifying bacteria during ice cover in McMurdo Sound, Antarctica. *Antarctic Journal of the United States*, 1986 Review Issue 21:171-172.

Priscu, J.C., editor. 2001. Year-Round Access to the McMurdo Region: Opportunities for Science and Education. Special publication 01-10. Department of Land Resources and Environmental Sciences, College of Agriculture, Montana State University, USA, 60 pp.

MAJOR RESEARCH PROPOSALS OF WHICH I AM/WAS PRINCIPAL OR CO-PRINCIPAL INVESTIGATOR:

"A Laboratory and Field Study of the Interaction of Microalgae and Bacteria in Aquatic Biofilms", 1985-1986. Funded by NSF Ecology Program. Amount: \$93,000/1 year.

"Response of Aquatic Nitrogen Cycling and Plankton Productivity to Acidification", 1985-1988. Funded by the College of Graduate Studies, Montana State University, Faculty Creativity Program and the U.S. Fish and Wildlife Service. Amount: \$28,500/1 year.

"Factors Regulating Nuisance and Potentially Toxic Blue-Green Algal Blooms in a Through-Flow Ecosystem", 1986. Funded by the Montana State Water Resources Research Center. Amount: \$24,000/1 year.

"Quantitative Estimation of the Effects of Operation of Libby and Hungary Horse Dams on the Reservoirs Fisheries", 1988-1989. Funded by Montana Department of Fish, Wildlife and Parks. Amount: \$137,561/2 years.

"Regulation of Nitrogen Fixation by Organic Matter in Aquatic Ecosystems", 1987-1990. Funded by Procter and Gamble. Amount: \$300,000/4 years.

"Nutrient Dynamics and Attached Algal Growth in a Large River", 1990. Funded by The Soap and Detergent Association, Procter and Gamble and Stone Container Company. Amount: \$80,000/1 year.

"The Effects of Nutrient Enrichment on Benthic Algae and Young-of-the-Year Salmonid Production in the Clark Fork River". 1991. Funded by the Soap and Detergent Association and Stone Container Company. Amount: \$70,000/1 year.

"Photoadaptation by Phytoplankton in Permanently Ice-Covered Antarctic Lakes: Response to a Non-Turbulent Environment", 1989-1992. Funded by NSF Division of Polar Programs. Amount: \$315,000/3 years.

"Persistence, Distribution and Environmental Impact of Enteric Bacteria in Antarctic Seawater", 1990. Funded by NSF Division of Polar Programs. Amount: \$77,000/1 year.

"Impact of Sewage Effluent and Survival of Pathogenic Organisms in McMurdo Sound, Antarctica", 1991-1992. Funded by NSF Division of Polar Programs. Amount: \$212,414/2 years.

"Influence of Phosphorus and Other Environmental Parameters on Toxin Production by the Blue-Green Alga Anabaena flos-aquae", 1991. Funded by the Soap and Detergent Association and Procter and Gamble. Amount: \$38,451/1 year.

"Biogeochemistry of nitrogen in a highly stratified, permanently ice-covered Antarctic Lake". 1992-1995. NSF Division of Polar Programs. Amount: \$340,000/3 years.

"Antarctic Dry Valleys: A Cold Desert Ecosystem", 1993-1999. This is an interdisciplinary project, of which I am a co-principal investigator, (involving 8 scientists) focusing on the effects that global climate change will have on an Antarctic desert ecosystem. NSF LTER Program. Amount: \$4,000,000/6 years. My component: \$450,000/6 years.

"Biogeochemistry of Nitrogen in a Highly Stratified, Permanently Ice-Covered Antarctic Lake". 1992-1995. NSF Division of Polar Programs. Amount: \$340,000/3 years.

NSF Research for Undergraduate Education (RUE) supplemental award to "Biogeochemistry of Nitrogen in a Highly Stratified, Permanently Ice-Covered Antarctic Lake". 1993. Amount: \$5,000/4 months.

"Nuisance Algal Blooms in the Colstrip Surge Pond: Causes and Consequences", 1992-1993. Funded by Montana Power Company. Amount: \$39,204/1 year.

"Antarctic lake ice microbial consortia: Origin, distribution, and growth physiology". 1995-1998. NSF Office of Polar Programs,. Amount: \$550,000/3 years.

NSF Research Education for Undergraduate Education (RUE) supplemental award to "Antarctic Dry Valleys: A Cold Desert Ecosystem", 1993. Amount: \$5,000/4 months.

NSF Research for Undergraduate Education (RUE) supplemental award to "Antarctic Lake Ice Microbial Consortia: Origin, Distribution, and Growth Physiology", 1997. Amount: \$5,000/4 months.

NSF Research for Undergraduate (RUE) supplemental award to "Antarctic Dry Valleys: A Cold Desert Ecosystem", 1997. Amount: \$5,000/4 months.

“Microbial life within the extreme environment posed by permanent Antarctic lake ice”. 1998-2000. NSF Life In Extreme Environments Program (LEn). Amount: \$488,758/3 years.

"The Role of Natural Legacy on Ecosystem Structure and Function in a Polar Desert: The McMurdo Dry Valley LTER Program", 1999-2005. This is an interdisciplinary project, of which I am a co-principal investigator, (involving 8 scientists) focusing on the role of resource legacy on ecosystem properties in an Antarctic desert. NSF LTER Program and the Division of Polar Programs \$4,200,000/6 year. My component: \$519,812/6 years.

“The Biogeochemistry of Dimethylsulfide (DMS) and Related Compounds in a Chemically Stratified Antarctic Lake”. 1999-2002. NSF Office of Polar Programs. Amount: \$468,819/3 years.

“The Search for Life in Deep-Ice associated with Lake Vostok, East Antarctic Ice Sheet”. 1999-2001. NSF Office of Polar Programs. \$13,000/4 months.

Phytoplankton in the McMurdo LTER lakes. 1999-2001. NSF Office of Polar Programs. \$30,000.

NSF Research for Undergraduate Education (RUE) supplemental award to "Biogeochemistry of DMS and related sulfur compounds in a Chemically Stratified Antarctic Lake", 1999. Amount: \$5,000/4 months.

“Bacterial Dynamics Under Antarctic Lake Ice”. 1996-1999. Montana Space Grant Consortium Graduate Student Award. \$52,000/3 years.

“Microbial Nutrition in Icy Systems”. 1999-2002. NASA Graduate Student Researchers Program (GSRP). \$66,000/3 years.

“Carbon and sediment cycling between soil and lake ice in the Taylor Valley, Antarctica”. 2000-2003. Montana Space Grant Consortium Graduate Student Award. \$17,500/year.

“Mars Immunoassay Life Detection Instrument (MILDI). Volume 1: Investigation and Technical Plan”. 2000-2002. NASA Office of Life and Microgravity Sciences and Applications, and Office of Space Flight. Total cost \$298,194/2 years (\$146,000 to MSU).

“Collaborative Research on the Geomicrobiology of Vostok Ice: Implications for Life in Lake Vostok”. 2001-2004. NSF LExEn Program. \$760,000/3 years.

“Microbial Diversity and Function in the Permanently Ice-Covered Lakes of the McMurdo Dry Valleys, Antarctica”, NSF Microbial Observatories Program. 2003-2008. \$1,200,000.

NSF Research Education for Undergraduate Education (RUE) supplemental award to “Microbial Diversity and Function in the Permanently Ice-Covered Lakes of the McMurdo Dry Valleys, Antarctica”, 1993. Amount: \$12,000.

“Life in Polar Regions Lake Ice”. 1999-2004. Montana Space Grant Consortium Graduate Student Award. \$52,000/3 years.

“Physical and biological consequences of a hydrocarbon spill on the ice cover of Lake Fryxell, Antarctica”. NSF Office of Polar Programs. \$75,034. 2004-2007.

“The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program”. \$7 million/6 years. 2005-2011. \$619,506/6 years to MSU.

“Nuclear-Magnetic Resonance and Electrical Measurements of Unfrozen Water in Mars-Analog Materials: Implications for Habitability at Subfreezing Temperatures on Mars”. NASA Exobiology Program. 2006-2009. \$99,998 to MSU. Collaboration with R. Grimm, Southwest Research Institute, Boulder, CO.

“Application for cold chambers and associated equipment to complete a subzero science and engineering facility at Montana State University”. NSF-MRI Program. \$1,200,000. 2005-2007.

“Science and Engineering Research Facility for the Study of Subzero Environments”. Murdock Charitable Trust”. \$800,000. 2005-2007.

“Paleo Records of Biotic and Abiotic Particles in Polar Ice Cores”. NSF Office of Polar Programs. \$254,827. 2006-2008.

“IPY-The McMurdo Dry Valley Lakes: Plankton Responses During the Transition to Polar Night”. NSF Office of Polar Programs \$350,000. 2007-2010.

“The presence of hydrocarbon contaminants and biodegradation in lake ice from the McMurdo Dry Valleys”. Pending. NSF-Office of Polar Programs. \$306,655. 2007-2010.

Crary Laboratory (Antarctica) Analytical Services. NSF-OPP. \$450,000 supplement to “The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program” . 2008-2011.

“Environmentally Non-Disturbing Under-ice Robotic ANtarctic Explorer (ENDURANCE)”. NASA ASTEP Program. \$99,235. 2008-2011.

“Astrobiology of Icy Worlds”. NASA Astrobiology Institute. Total budget: \$8,184,000/5 yrs. MSU component: \$240,975. 2008-2013.

“Collaborative Research: Integrated High Resolution Chemical and Biological Measurements on the Deep WAIS Divide Core”. NSF Office of Polar Programs- Antarctic Glaciology. Total budget: \$2,182,530. MSU Component: \$631,900. 2010-2014.

“Collaborative Research: GeomicroBiology of Antarctic Subglacial Environments (GBASE) Beneath the Mercer and Whillans Ice Streams”. Submitted to NSF Office of Polar Programs- Antarctic Integrated System Science (AISS). Total budget \$10,000,000. MSU component: \$2,540,260. October 2009-October 2014.

“Increased Connectivity in a Polar Desert Resulting from Climate Warming: The McMurdo Dry Valley LTER Program”. \$5.6 million/6 years, 2011-2017. \$696,276/6 years to MSU.

“Habitability of Antarctic lakes and detectability of microbial life in icy environments by autonomous year-round instrumentation”. NSF Office of Polar Programs/NASA ASTEP. \$114,633 /2 years. 1 February 2013-1 March 2016.

“Whillans Ice Stream Subglacial Access Research Drilling: Integrative Study of Marine Ice Sheet Stability and Subglacial Habitats in West Antarctica”. NSF Office of Polar Programs. \$997,705. September 2014-September July 2016.

“The WATSON Project: Wire-line Analysis Tool for Subsurface Observations of Northern-ice-sheets”. NASA PSTAR. NASA Astrobiology. \$430,032/3y to MSU. November 2015 – November 2018.

“Collaborative Research: Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically-active subglacial environments”. J. Priscu, Chief Scientist. NSF-PLR Antarctic Integrated Systems Science. Total Science and drill budget \$5,193,544/3y; \$1,510,715/3y to MSU. 1 September 2016-1 September 2019.

“Ecosystem response to landscape connectivity dynamics: The McMurdo Dry Valley LTER Program”. \$9 million/6 years, 2016-2023. ~\$800,000/6 years to MSU. March 2017-March 2023.

MAJOR ADVISOR TO THE FOLLOWING GRADUATE STUDENTS:

1. Robert T. Angelo, Ph.D. June 1989. "Hydrogen ion concentration and microbial activity in aquatic alpine systems".
2. Lizhu Wang, Ph.D. 1992. "Control of bacterioplankton activity in a eutrophic lake emphasizing relationships among bacteria, cyanobacteria and nutrients".
3. Thomas Miller, M.Sc. 1991. "Influence of inorganic and organic nutrient enrichment on blue-green algal activity and relative biomass in a eutrophic southwest Montana reservoir".
4. Thomas Sharp, M.Sc. 1993. "Temporal and spatial variation of light, nutrients and phytoplankton production in Lake Bonney, Antarctica, Antarctica".
5. Katrin Schwarz, M.Sc. 1991. "Phytoplankton responses to phytoplankton growth in a large pre-alpine lake: Lake Constance, West Germany".
6. Christopher Woolston, M.Sc. 1994. "Nitrogen transformations in Lake Bonney: Antarctica: Dynamics in a non-turbulent environment".
7. Michael Briggs, M.Sc. 1994. "Chemical and physical factors regulating blue-green algal abundance in a regulated reservoir; Colstrip, Montana".
8. Christina Takacs. Ph.D. 1999. "Bacterial activity and secondary production in Antarctic lakes".
9. Nicole Tursich. M.Sc. 2002. "The use of Antarctic lake phytoplankton to track climate change".
10. Scott Konley. M.Sc. 2003. "Carbon and sediment cycling between soil and lake ice in the Taylor Valley, Antarctica".
11. Jill A. Mikucki. Ph.D. 2005. "Microbial Ecology of an Antarctic Subglacial environment".
12. Joel Moore. M.Sc. 2007. "Microbial Processes in the Moats of Lakes in the Taylor Valley, Antarctica."
13. Trista Vick. 2010. M.Sc. Bacterial Process in Lakes of the Taylor Valley, Antarctica.
14. Marie Sabacka. Ph.D. 2011. "Microbial Diversity Across Landscape Units in the McMurdo Dry Valleys, Antarctica".
15. Alexander Michaud. Ph.D. 2016. Subglacial Processes beneath the West Antarctic Ice Streams.
16. Pamela Santibinez. Ph.D. 2015. High Resolution Biological Measurements in Ice Cores.
17. Trista Vick-Majors. Ph.D. 2015. Biogeochemical Processes in Antarctic Aquatic Environments; Linkages and Limitations.
18. Priyanka Kudalkar. 2016. MSc. Fungi in Antarctic lake ice.
19. Jeff Patriarch. MSc. 2016. Overwinter trends in phytoplankton pigment composition in a permanently ice covered Antarctic lake.

20. Kimberly Roush, MSc. 2019. Marine sediment geochemistry beneath the Ross Ice Shelf, Antarctica.

21. Carolyn Harris, Ph.D. Carbon transformations in permanently ice-covered Antarctic lakes.

SUPERVISOR TO THE FOLLOWING POST-DOCTORAL SCIENTISTS:

1. Dr. Robert Murry
2. Dr. Walter Dodds
3. Dr. Michael Lizotte
4. Dr. N. Kangatharalingam
5. Dr. Kirk Lohman
6. Dr. Robert Spigel
7. Dr. Patrick Neale
8. Dr. Diane Brawner
9. Dr. Christopher Fritsen

10. Dr. Emily Roberts
11. Dr. Peter Lee
12. Dr. Christine Foreman
13. Dr. Brent Christner
14. Dr. Steve Jepsen
15. Dr. Elanor Bell
16. Dr. Jill Thurman
17. Dr. Sunita Shah

18. Dr. Juliana D'Adrilli
19. Dr. Heather Adams
20. Dr. Yongqin Liu
21. Dr. John Dore
22. Dr. Wei Li
22. Dr. Naicheng Wu

TECHNICIANS SUPERVISED:

1. Mary Ellen Dietz
2. Lori Dwyer
3. John Beehler
4. Kirk Johnson
5. Thomas Sharp
6. Patty Denke
7. Teresa Tonkovich (Galli)
8. Linda Loetterle
9. Ian Shepard
10. Ian Forne
11. Richard Bartlett
12. Rob Edwards
13. Van Kalbach
14. Alix Cockcroft

15. Margaret Giessler
16. Jordon Grover
17. Anne Lundberg-Martell
18. Conrad Cooper
19. Kate Wing
20. Jordan Grover
21. Amanda Grue
22. Scott Konley
23. Jill Mikucki
24. Nicole Tursich
25. Tucker Stevens
26. Craig Wolf
27. Amy Chiuchiolo
28. Nicholas Andrew

29. Brianna Arnold
30. Rob VanTreese
31. Janet Lynch
32. Andrew Baber
33. Philip Lee
34. Erik Bottos
35. Stephen Pederson
36. Kimberly Roush
37. Jade Lawrence
38. Anna Galipeau
39. Elizabeth Vonderhaar

COURSES TAUGHT:

1. Molecular and Cellular Biology/Principles of Biology (Biol 102/Biob160, freshman level): This course presents a survey of cellular metabolism (plants and animals) and genetics.

2. Algal Ecology-Phycology (Biol 433, senior level): This course is divided into two parts. The first covers taxonomy and evolution of attached and free-living algae, the second is involved with the biochemistry, physiology and ecology of algae. Both marine and freshwater forms are covered.

3. Energetics in Aquatic Systems (Biol 502, graduate level): Covers advanced aspects of heat flow, light penetration, advection and diffusion dynamics of gases and nutrients within a liquid, and gas transfer at the air/water interface. Examines how aquatic microorganisms (bacteria and algae) reciprocate with each other and with their surrounding environment. Particular emphasis is placed on physiological adaptations by the organisms to changing environmental conditions. The course stresses how these processes relate to the biological component of marine and freshwater systems.

4. Physical-Chemical Limnology (graduate level): Focuses on the interaction of optics, mixing/diffusion and lake chemistry. Both marine and freshwater systems are discussed.

5. Advanced Biological Limnology (graduate level): Covers physiological responses of microplankton to the physical and chemical environment. The approach is examine the role of microorganisms to ecosystem structure and function.