

Lee F. Stanish

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EDUCATION

University of Colorado, Boulder, Institute of Arctic and Alpine Research

PhD in Environmental Studies Program, December 2011

Advisor: Dr. Diane M. McKnight; Co-advisor: Dr. Diana R. Nemergut

Dissertation: Ecological controls on stream diatom communities in the McMurdo Dry Valleys, Antarctica

University of Massachusetts, Amherst

B.S. in Biological Sciences with minor degrees in Chemistry and Anthropology, 2003,
summa cum laude

RESEARCH and LEADERSHIP EXPERIENCE

Doctoral Research: Institute of Arctic and Alpine Research (2005 - 2011)

- Characterized the diversity and ecological controls of micro-organisms in stream microbial mats within the McMurdo Dry Valleys of Antarctica using high-throughput pyrosequencing
- Examined environmental drivers of diatom diversity and community composition in Dry Valley streams using data collected as part of the Long-Term Ecological Research (LTER) Program
- Performed a field study of timing and sources of organic matter from streams to lakes in the McMurdo Dry Valleys
- Conducted a laboratory study of the influence of temperature on the growth rates of Antarctic stream diatom isolates

Project liaison, Project Extremes, 2010

- Coordinated the field season for the NSF-funded, Graduate K-12 research and teaching expedition to the McMurdo Dry Valleys
- Organized field logistics and mediated interactions between the Project Extremes team and other McMurdo Dry Valleys research participants

EXTREME 2008: A Deep Sea Adventure, University of Delaware, 2008

- Conducted water chemistry analyses during the 3-week cruise studying microbial diversity of hydrothermal vents
- Participated in outreach activities during the research cruise

Research Associate, University of Massachusetts Medical School, Neuroscience program, principal investigator: Dr. Ann Rittenhouse (2003-2005)

- Studied calcium channel modulation and biochemical pathways in neurons
- Technical skills acquired include:
 - RNA expression using reverse transcription PCR; Mammalian cell culture and plasmid transfection; Western blotting; Electrophysiology

Undergraduate Honors Research, University of Massachusetts, Amherst, Biology Department, principal investigator: Dr. Elsbeth Walker (2002-2003)

- Investigated the functional role of a hypothetical metal transport gene from maize in the model plant organism *Arabidopsis thaliana*
- Technical skills acquired include:
 - RNA expression assays using semi-quantitative reverse transcription PCR;
 - Agrobacterium*-mediated gene transformation of *A. thaliana*

Biological Technician, USDA, APHIS, PPQ

- Managed quarantined insect populations and assisted in field research

SEA Semester, 2001

- Participated in the semester-long course that teaches undergraduates how to sail and to perform marine biological research
- Completed a research project monitoring latitudinal changes in phytoplankton composition in the North Atlantic Ocean

SKILLS

- QIIME microbial community analysis pipeline for next generation sequencing
- R data analysis program
- Experience in grant-writing
- Competent in Spanish

TEACHING and MENTORING EXPERIENCE

University of Colorado, Boulder

- Guest Lecturer for Winter Ecology, 2011 and 2012
- Guest Lecturer for Applied Stream Ecology, 2010
- Teaching Assistant for Introduction to Environmental Studies, 2009
- Teaching Assistant for General Biology II Lab, 2006
- Teaching Assistant for Principles of Ecology Lab, 2005
- Mentored three undergraduate students, 2006-2011

AWARDS and HONORS

- Colorado Center for Biorefining and Biofuels Postdoctoral Seed Grant Recipient, \$35,000 (2011)

- Assisted in writing the Antarctic Organisms and Ecosystems grant #0839020, \$500,000 (2009)
- Beverly Sears Graduate student grant, \$1000 (2009)
- Beatrice Willard memorial fellowship in field ecology, tuition+stipend (2007)
- Commonwealth College honors research grant (2003)
- NSF summer research stipend, \$4500 (2002)
- Otto Degener Scholarship for research in plant biology (2002)

PROFESSIONAL ACTIVITIES

- Journal Referee, *Journal of Environmental Management*
- Member of Ecological Society of America, Phycological Society of America, American Society of Limnology and Oceanography, American Society of Microbiology; Association of Polar Early Career Scientists, North American Benthological Society

VOLUNTEER and OUTREACH ACTIVITIES

- Volunteer with Wildlands Restoration Volunteers, 2005-
- Volunteered with Boulder County's energy efficiency program distributing energy efficiency packets to low-income neighborhoods, Spring 2006
- Participant in stream flow demonstrations during the annual INSTAAR Open House, an outreach program for middle school students visiting INSTAAR, 2006-2011
- Volunteer science judge for the annual National Ocean Sciences Bowl regional competition, 2009-2011

RESEARCH PRESENTATIONS and MEETINGS

- Colorado Center for Biorefining and Biofuels bi-annual meeting, 2011
Poster and Presentation: "Opening the algal biofuels black box: Are polycultures more stable than monocultures when faced with environmental contamination?"
- American Society of Microbiology meeting, 2011
Poster: "Cyanobacterial endemism in Antarctic stream microbial mats"
- American Society for Limnology and Oceanography meeting, 2011
Presentation: "Hydrologic processes influence the patterns of diatom community composition in Dry Valley streams"
- International Society for Microbial Ecology meeting, 2010
Poster: "Historical pattern in stream flow influence diatom communities in Antarctic streams"
- Scientific Committee on Antarctic Research meeting, 2010
Session co-convenor: "Organisms: Biogeochemical indicators of environmental change"
- American Society for Limnology and Oceanography and North American Benthological Society joint meeting, 2010
Poster: "The role of temperature and soil moisture on habitat preferences of stream microbial mats in Taylor Valley, McMurdo Dry Valleys, Antarctica"
- Bioinformatics Supergroup meeting, 2010

Presentation: “Environmental drivers of diatom communities: long-term trends from Antarctic streams”

- Long-Term Ecological Society All-scientists meeting, 2009
Poster: “Examining the role of spatial variability and water availability on diatom community composition in stream microbial mats of Taylor Valley, McMurdo Dry Valleys, Antarctica”
- Ecological Society of America, 2009
Presentation: “Drifting along: the fate of diatoms and organic material in a Dry Valley stream”
- North American Benthological Society, 2009
Presentation: “Habitat severity influences flow responses of diatom communities in an Antarctic stream”
- 20th International Diatom Symposium, 2008
Poster: “Diatoms of cryoconite holes on glaciers in the McMurdo Dry Valleys, Antarctica”

PUBLICATIONS

- **Stanish, LF**, et al. Diatom and bacterial co-occurrence patterns in algal mats from glacial meltwater streams in the McMurdo Dry Valleys, Antarctica, in progress.
- **Stanish, LF**, TJ Kohler, RMM Esposito, et al. Extreme Streams: Flow intermittency as a control on diatom communities in meltwater streams in the McMurdo Dry Valleys, Antarctica. *Canadian Journal of Fisheries and Aquatic Sciences*, *Canadian Journal of Fisheries and Aquatic Sciences*, accepted.
- **Stanish, LF**, DR Nemergut, DM McKnight. 2011. Hydrologic processes influence diatom community composition in Dry Valley streams. *Journal of the North American Benthological Society*, 30(4): 1057-1073.
- Nemergut, DR, EK Costello, M Hamady, C Lozupone, L Jiang, SK Schmidt, N Fierer, AR Townsend, CC Cleveland, **LF Stanish**, R Knight. 2011. Global patterns in the biogeography of bacterial taxa. *Environmental Microbiology* 13(1): 135-144.
- Van de Vijver, B, G Mataloni, **L Stanish**, SA Spaulding. 2010. New and interesting species of the genus *Muelleria* (Bacillariophyta) from the Antarctic region of South Africa. *Phycologia* 49(1): 22-41.
- Stoermer, EF and JP Smol (eds). *The Diatoms: Applications for the Environmental and Earth Sciences*, vol 2. Cambridge University Press, Cambridge, UK, 2010, contributing author.
- Heneghan, JF, T Mitra-Ganguli, **LF Stanish**, L Liu, AR Rittenhouse. 2009. The calcium channel beta subunit determines whether stimulation of Gq-coupled receptors enhances or inhibits N current. *Journal of General Physiology* 134(5): 369-84.
- Liu, L, JF Heneghan, GJ Michael, **LF Stanish**, M Egertova, AR Rittenhouse. 2008. L- and N-current but not M-current inhibition by M1 muscarinic receptors requires DAG lipase activity. *Journal of Cellular Physiology* 216(1): 91-100.
- Liu, L, R Zhao, Y Bai, **LF Stanish**, JE Evans, MJ Sanderson, JV Bonventre, AR Rittenhouse. 2006. M₁ Muscarinic Receptors Inhibit L-type Ca²⁺ Current and M-Current by Divergent Signal Transduction Cascades. *Journal of Neuroscience* 26(45): 11588-98.

REFERENCES

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