

Curriculum Vitae Steven K. Schmidt

Education

Ph.D., Microbiology, Cornell University
M.S., Mycology, Colorado State University
B.S., (Magna Cum Laude), Biology, Boise State University

Positions

2018 Interim Chair, Dept. of Ecology and Evol. Biology, U. Colorado, Boulder
2011-2015 Chair, Dept. of Ecology and Evol. Biology, U. Colorado, Boulder
2001-present Professor, Dept. of Ecology and Evol. Biology, U. Colorado, Boulder
1996-2001 Associate Chair for graduate studies, Dept. of EEB.
1993-2000 Assoc. Professor, Dept. of EEB, University of Colorado, Boulder
1987-1993 Asst. Professor, Dept. of EEB, University of Colorado, Boulder

Professional Societies

American Society for Microbiology
American Association for the Advancement of Science
American Geophysical Union

Honors

College Scholar Award, University of Colorado, Boulder, 2015/2016
Research Excellence Award, Boulder Faculty Assembly, 2011
Faculty Fellowship, University of Colorado, Boulder, 2008/2009
Junior Faculty Dev. Award, University of Colorado, Boulder
Sage Graduate Fellowship, Cornell University
Elon Huntington Hooker Fellowship, Cornell University

National Panels served on (last 10 years)

NSF Integrative Ecological Physiology panel 2017
NSF Ecosystem Studies panel 2014
NASA Exobiology panel 2010

Major Grants

NSF "Collaborative research: Role of nutrient limitation and viral interactions on Antarctic microbial community assembly: A cryoconite microcosm study" 04/2022 - 03/2024.
NSF "Alpine Hotspots: Nutrient Patches Facilitate Upslope Expansion of Tropical Alpine Communities Under Rapid Climate Change" (Co-PI w/ Kelsey Reider) 10/2023 - 9/2026.
NSF "Collaborative Research: SitS UKRI: Sensors UNDER snow, Seasonal Processes in the Evolution of Arctic Soils (SUN SPEARS)" 01/01/20-12/31/23.
NSF "Collaborative Research: Stochasticity and Cryoconite Community Assembly and Function" (Co-PI with D. Nemergut), 09/01/16-08/31/2020.
The Kristina and William Catto Foundation. "Effects of Herbicides on Mycorrhizal Fungi and Soil Ecosystems" 2017 - 2023.
NSF "Moving uphill: Microbial Facilitation at the Leading Edge of Plant Species Distributional Shifts" (Co-PI with K. Suding), 6/15 - 5/2019.
USAF Office of Scientific Research. "Engineering Survival Functions with Genes from

- Extremophilic Bacteria of the High Atacama Desert", 10/2013 – 08/2016.
- NSF** "Relative Controls of Niche vs. Neutral Microbial Community Assembly Processes Over Ecosystem Function Post-Disturbance" (Co-PI with D. Nemergut) 4/2013 – 3/2017.
- NSF** "The Role of Dust on Snow and Other Aeolian Inputs in Soil Formation and Biogeochemical Cycling in Barren, Alpine Catchments" 9/11 – 08/14.
- NSF** "LTER: Tipping points in high-elevation ecosystems in response to changes in climate and atmospheric deposition" 12/2010 – 11/2016. (Co-PI w/ 16 others).
- NSF** "Collaborative Research: Links Between Soil Biogeochemistry and Microbial Community Dynamics Along Recently Deglaciated Chronosequences" 9/09 – 08/12.
- NSF (Microbial Observatories)** "The Alpine Microbial Observatory: Changes in Microbial Diversity and Function Across Extreme Environmental Gradients" 10/2005 - 9/2010
- National Geographic Society** "The Aeolian Zone Revisited: Life in Earth's Most Extreme Ecosystems" 8/2008 - 7/2009.
- NSF (Biotic Surveys and Inventories)**, "Discovery, Description, and Biogeography of Novel Alpine Fungi" 7/04 - 6/07 (Lead PI).
- NSF (LTER)**, "Long Term Ecological Research: The Landscape Continuum Model: A Biogeochemical Paradigm for High Elevation Ecosystem" 12/04-11/10, coPI.
- NSF (Microbial Observatories)**, "Microbial Biogeochemistry and Functional Diversity across the Forest-Tundra Ecotone of the Rocky Mountains" 10/00 - 9/05 (lead PI).
- National Geographic Society** "Biogeography of novel fungal lineages on three continents" 1/04 - 12/05.
- NSF**, "Soil Respiration and Microbial Diversity in a Subalpine Forest". 6/1/02 - 5/31/05 (Co-PI with R. Monson).
- NSF**, "Phosphorus regulation of decomposition, microbial dynamics, and foliar chemistry in moist tropical forests" 01/01/01 - 12/31/03 (Co-PI with A. Townsend).
- NSF**, "Ecophysiological roles of plants, mycorrhizae, and soil microbes in early spring nitrogen dynamics", 6/99 - 5/02 (Lead PI).
- NSF (LEnEn)**, "Microbial Diversity and Energy Flow in Barren High Elevation Talus" 9/98 - 8/01.
- EPA**, "Effects of anthropogenic nitrogen deposition on the functioning of alpine and subalpine ecosystems: N cycling and trace gas fluxes" 9/95 - 10/99.
- NSF (LTER)**, "Controls on the structure, function and interactions of alpine and subalpine ecosystems of the Colorado Front Range", 1998 - 2004 (CoPI w/ 16 others).
- NSF**, "Soil amino acid uptake by alpine plants and microorganisms", 1/96 - 12/98 (Co-PI with R. Monson).
- EPA**, "Biotic and abiotic controls of N₂O fluxes from alpine ecosystems", 8/93 - 7/96.
- NSF**, "Resource storage in alpine plants", (coPI w/ R. Monson) 1992 - 1995.
- NSF (LTER)**, "Effects of climate change in the Colorado alpine: Ecosystem response to altered snowpack and rainfall regimes" (CoPI w/ 19 others) 1992-1998.

Publications

- Vincent K, Holland-Moritz H, Solon AJ, Gendron EMS, Schmidt SK. **2022**. Crossing treeline: Bacterioplankton communities of Alpine and Subalpine Rocky Mountain lakes. *Frontiers Microbiology* 12: 533121.
- Schmidt SK, Johnson BW, Solon AJ, Sommers P, Darcy JL, *et al.* **2022**. Microbial biogeochemistry and phosphorus limitation in cryoconite holes on glaciers across the Taylor Valley, McMurdo Dry Valleys, Antarctica. *Biogeochemistry* 158: 313-326.

- Lim MCW, Seimon A, Nightingale B, Xu CCY, Halloy SRP, Solon AJ, Dragone NB, Schmidt SK, *et. al.* **2022**. Estimating biodiversity across the tree of life on Mount Everest's southern flank with environmental DNA. *IScience* 25: 104848.
- Vimercati L, Bueno de Mesquita CP, Johnson BW, Mineart D, DeForce E, Vimercati Molano Y, Ducklow H, Schmidt SK **2022**. Dynamic trophic shifts in bacterial and eukaryotic communities during the first 30 years of microbial succession following retreat of an Antarctic glacier." *FEMS Micobiol Ecol.* 98: fiac122.
- Porazinska DL, Seastedt TR, Gendron E, Schmidt SK **2022**. Invasive annual cheatgrass enhances the abundance of native microbial and microinvertebrate eukaryotes but reduces invasive earthworms. *Plant and Soil* 473: 591-604.
- Steppan SJ, Bowen T, Bangs MR, Farson M, Quiroga-Carmona M, D'Elia G, *et. al.* **2022**. Evidence of a population of leaf-eared mice *Phyllotis vaccarum* above 6,000 m in the Andes. *J. Mammol.* 103: 776-785.
- Luecke NC, de Mesquita CPB, Luong M, Schmidt SK *et. al.* **2022**. Causes and consequences of differences in soil and seed microbiomes for two alpine plants. *Oecologia* 200: 385-396.
- McQueen JP, Gattoni K, Gendron EMS, Schmidt SK *et al.* **2022**. Host identity is the dominant factor in the assembly of nematode and tardigrade gut microbiomes in Antarctic Dry Valley streams. *Scientific Reports* 12: 20118.
- Buscardo E, Geml J, Schmidt SK, *et al.* **2022**. Nitrogen pulses increase fungal pathogens in Amazonian lowland tropical rain forests. *J. Ecology* 110: 1775-1789.
- Solon A, Mastrangelo C, Vimercati L, Sommers P, Darcy JL, Gendron E, Porazinska DL, Schmidt SK. **2021**. Gullies and moraines are islands of biodiversity in an arid, mountain landscape, Asgard Range, Antarctica. *Frontiers Microbiology* 12: 654135
- Aran P, P Aguilar *et al.* **2021**. Insights into an undescribed high-elevation lake (6,170 m a.s.l.) on Volcán Llullaillaco: A physical and microbiological view. *Aquatic Conservation Marine Freshwater Ecosystems*. <https://doi.org/10.1002/aqc.3612>
- Hu, W., S.K. Schmidt, P. Sommers, J.L. Darcy, D.L. Porazinska. **2021**. Multi-trophic patterns of primary succession following retreat of a high-elevation glacier. *Ecosphere* 12:e03400.
- Buscardo, E., Souza, R.C., Meir, P. *et al.* **2021**. Effects of natural and experimental drought on soil fungi and biogeochemistry in an Amazon rain forest. *Commun Earth Environ* **2**: 55.
- Meade C, de Mesquita CPB, Schmidt SK, Suding KN. **2021**. The presence of a foreign microbial community promotes plant growth and reduces filtering of root fungi in the arctic-alpine plant *Silene acaulis*. *Plant Ecology Diversity*. 13: 377-390.
- Knelman J, SK Schmidt, EB Graham. **2021**. Cyanobacteria in early soil development of deglaciated forefields: Dominance of non-heterocystous filamentous cyanobacteria and phosphorus limitation of N-fixing Nostocales. *Soil Biology Biochemistry* 154: 108127
- Reider KE, Schmidt SK. **2021**. Vicuña dung gardens at the edge of the cryosphere: **Reply**." *Ecology*: e03579.
- Brigham LM, de Mesquita CPB, Smith JG, Sartwell SA, Schmidt SK, Suding KN. **2021**. Do plant-soil interactions influence how the microbial community responds to environmental change? *Ecology*. 103: e03554.
- Porazinska DL, Bueno de Mesquita CP, Farrer EC, Spasojevic MJ, Suding KN, Schmidt SK. **2021**. Nematode community diversity and function across an alpine landscape undergoing plant colonization of previously unvegetated soils. *Soil Biology Biochemistry* 161: 108380.
- Reider, K.E., and Schmidt, S.K. **2020**. Vicuña dung gardens at the edge of the cryosphere. *Ecology* 102: e03228. [10.1002/ecy.3228](https://doi.org/10.1002/ecy.3228)
- Sommers P, DL Porazinska, JL Darcy, *et al.* **2020**. Microbial species–area relationships in Antarctic cryoconite holes depend on productivity. *Microorganisms* 8, 1747.

- Bueno de Mesquita CP, Sartwell, SA, Schmidt SK, Suding KN. 2020. Growing-season length and soil microbes influence the performance of a generalist bunchgrass beyond its current range. *Ecology* 101: e03095
- Zawierucha, K., Porazinska, D.L., Ficetola, G.F., et al. 2020. A hole in the nematosphere: tardigrades and rotifers dominate the cryoconite hole environment, whereas nematodes are missing. *J. Zoology* <https://doi.org/10.1111/jzo.12832>
- Vimercati, L.; Bueno de Mesquita, C.P.; Schmidt, S.K. 2020. Limited response of indigenous microbes to water and nutrient pulses in high-elevation Atacama soils: Implications for the cold-dry limits of life on Earth. *Microorganisms* 8, 1061.
- Schmidt, S.K., Sowell, P., Schubert, Z.R. et al. 2020. Of Microbes and Mummies: Tales of Microbial Activity and Inactivity at 6000 m a.s.l. *IN Microbial Ecosystems in Central Andes Extreme Environments: Biofilms, Microbial Mats, Microbialites and Endoevaporites*. Springer International Publishing, Cham, pages 97-112.
- Bueno de Mesquita CP, Brigham LM, Sommers P, Porazinska DL, Farrer EC, Darcy JL, Suding KN, Schmidt SK. 2020. Evidence for phosphorus limitation in high-elevation unvegetated soils, Niwot Ridge, Colorado. *Biogeochemistry* 147: 1-13.
- Sommers P., R.S. Fontenele, T. Kringen, S. Kraberger, D.L. Porazinska, J.L. Darcy, S.K. Schmidt, A. Varsani. 2019. Single-Stranded DNA Viruses in Antarctic Cryoconite Holes. *Viruses* 11: 1022 doi:10.3390/v11111022
- Bueno de Mesquita CP, Schmidt SK, Suding KN. 2019. Litter-driven feedbacks influence plant colonization of a high elevation early successional ecosystem. *Plant and Soil* 444: 71-85.
- Farrer EC, Porazinska DL, Spasojevic MJ, King AJ, de Mesquita CPB, Sartwell SA, Smith JG, White CT, Schmidt SK, Suding KN 2019. Soil Microbial Networks Shift Across a High-Elevation Successional Gradient. *Frontiers Microbiology* ARTN 2887.
- Knelman JE, Schmidt SK, Garayburu-Caruso V, Kumar S, Graham EB. 2019. Multiple, Compounding Disturbances in a Forest Ecosystem: Fire Increases Susceptibility of Soil Edaphic Properties, Bacterial Community Structure, and Function to Change with Extreme Precipitation Event. *Soil Systems* ARTN 40.
- Sommers P., J.L. Darcy, D.L. Porazinska, E.M.S. Gendron, A.G. Fountain, F. Zamora, K. Vincent, K.M. Cawley, A.J. Solon, L. Vimercati, J. Ryder, S.K. Schmidt. 2019. Microbial communities in the sediments and water columns of frozen cryoconite holes in the McMurdo Dry Valleys, Antarctica. *Frontiers Microbiology* doi: 10.3389/fmicb.2019.00065
- Sommers P., D.L. Porazinska, J.L. Darcy, F. Zamora, A.G. Fountain, S.K. Schmidt. 2019. Experimental cryoconite holes as mesocosms for studying community ecology. *Polar Biology* <https://doi.org/10.1007/s00300-019-02572-7>
- Schmidt S.K., L. Vimercati L. 2019. Growth of cyanobacterial soil crusts during diurnal freeze-thaw cycles. *J. Microbiology* DOI 10.1007/s12275-019-8359-5
- Vimercati L., A.J. Solon, A. Krinsky, P. Arán, D.L. Porazinska, J.L. Darcy, C. Dorador, S.K. Schmidt. 2019. Nieves penitentes are a new habitat for snow algae in one of the most extreme high elevation environments on Earth. *Arctic, Antarctic, Alpine Res.* 51:190-200.
- Vimercati L., J.L. Darcy, S.K. Schmidt. 2019. The disappearing periglacial ecosystem atop Mt. Kilimanjaro supports both cosmopolitan and endemic microbial communities. *Sci. Reports* (In Press)
- Gendron, E.M.S., J.L. Darcy, K. Hell, S.K. Schmidt. 2019. Structure of bacterial and eukaryote communities reflect *in situ* controls on community assembly in a high-alpine lake. *J. Microbiol.* (In Press).

- Darcy J.L., S.K. Schmidt, J.E. Knelman, C.C. Cleveland, S.C. Castle, D.R. Nemergut. 2018. Phosphorus, not nitrogen, limits plants and microbial primary producers following glacial retreat. *Science Advances* 4: eaaq0942
- Darcy J.L., Gendron E.M.S., Sommers P., Porazinska D.L., Schmidt S.K. 2019. Island biogeography of cryoconite hole bacteria in Antarctica's Taylor Valley and around the world. *Frontiers Ecology Evolution* 6: 10.3389/fevo.2018.00180
- Porazinska, D.L., Farrer E.C., Spasojevic M.J., Bueno de Mesquita C.P. et al. 2018. Plant diversity and density predict belowground diversity and function in an early successional alpine ecosystem. *Ecology* 99: 1942-1952.
- Bueno de Mesquita C.P., Martinez del Río C.M., Suding K.N. et al. 2018. Rapid temporal changes in root colonization by arbuscular mycorrhizal fungi and fine root endophytes, not dark septate endophytes, track plant activity and environment in an alpine ecosystem. *Mycorrhiza* 28: 717. <https://doi.org/10.1007/s00572-018-0863-7>
- Schmidt S.K., Gendron E.M.S., Vincent K. et al. 2018. Life at extreme elevations on Atacama volcanoes: The closest thing to Mars on Earth? *Antonie van Leeuwenhoek* <https://doi.org/10.1007/s10482-018-1066-0>
- Sommers P., JL Darcy, EMS Gendron, LF Stanish, EA Bagshaw, DL Porazinska, SK Schmidt 2018. Diversity patterns of microbial eukaryotes mirror those of bacteria in Antarctic cryoconite holes. *FEMS Microbiol. Ecol.* 94: <https://doi.org/10.1093/femsec/fix167>
- Solon AJ, Vimercati L, Darcy JL, Arán P, Porazinska D, Dorador C, Farias ME, Schmidt SK (2018) Microbial communities of high-elevation fumaroles, penitentes and dry tephra "soils" of the Puna de Atacama Volcanic Zone. *Microb Ecol* doi/10.1007/s00248-017-1129-1
- Bueno de Mesquita, C.P., S.A. Sartwell, E.V. Ordemann et al. (2018) Patterns of root colonization by arbuscular mycorrhizal fungi and dark septate endophytes across a mostly-unvegetated, high-elevation landscape. *Fungal Ecology* 36: 63-74
- Knelman JE, Graham EB, Prevéy JS, Robeson MS, Kelly P, Hood E and Schmidt SK (2018) Interspecific plant interactions reflected in soil bacterial community structure and nitrogen cycling in primary succession. *Front. Microbiol.* 9:128. doi: 10.3389/fmicb.2018.00128
- Buscardo, E., J. Geml, S.K Schmidt, A.L.C. Silva, R.T.J. Ramos et al. 2017. Of mammals and bacteria in a rainforest: Temporal dynamics of soil bacteria in response to simulated N pulse from mammalian urine. *Functional Ecol.* DOI: 10.1111/1365-2435.12998
- Buscardo, E., J. Geml, S.K Schmidt, H. Freitas, H. Brandão da Cunha, L. Nagy. 2018. Spatio-temporal dynamics of soil bacterial communities as a function of Amazon forest phenology. *Sci. Reports* <https://doi.org/10.1038/s41598-018-22380-z>
- Castle S.C., B.W. Sullivan, J.E. Knelman, E. Hood, D.R. Nemergut, S.K. Schmidt, C.C. Cleveland. 2018. Nutrient limitation of soil microbial activity during the earliest stages of ecosystem development. *Oecologia* 185: 513-524.
- Bueno de Mesquita, CP, J.E. Knelman, A.J. King, E.C. Farrer, D.L. Porazinska, S.K. Schmidt, K.N. Suding. 2017. Plant colonization of moss-dominated soils in the alpine: Microbial and biogeochemical implications. *Soil Biol. Biochem.* 111: 135-142.
- Schmidt S.K., J. L. Darcy, P. Sommers, E. Gunawan, J. E. Knelman, K. Jager. 2017. Freeze-thaw revival of rotifers and algae in a desiccated, high elevation (5500 meters) microbial mat, high Andes, Perú. *Extremophiles* 21: 573-580.
- Schmidt S.K., L. Vimercati, J.L. Darcy, P. Arán, E.M.S. Gendron, A.J. Solon, D. Porazinska, C. Dorador. 2017. A *Naganishia* in high places: functioning populations or dormant cells from the atmosphere? *Mycology* doi: 10.1080/21501203.2017.1344154
- Darcy J.L., A.J. King, E.M.S. Gendron, S.K. Schmidt. 2017. Spatial autocorrelation of microbial communities atop a debris-covered glacier is evidence of a supraglacial chronosequence. *FEMS Microbiol. Ecol.* 10.1093/femsec/fix095

- Castle, S.C., D.R. Nemergut, A.S. Grandy, J.W. Leff; E.B. Graham, E. Hood; S.K. Schmidt, K. Wickings, C.C. Cleveland. 2016. Biogeochemical drivers of microbial community convergence across actively retreating glaciers. *Soil Biol. Biochem.* 101:74-84.
- Schmidt, S.K., D. Porazinska, B.-L. Conciencie, J.L. Darcy, A.J. King, D.R. Nemergut. 2016. Biogeochemical stoichiometry reveals P and N limitation across the post-glacial landscape of Denali National Park, Alaska. *Ecosystems* 19: 1164–1177.
- Darcy, J.L. and S.K. Schmidt. 2016. Nutrient limitation of microbial phototrophs on a debris-covered glacier. *Soil Biol. Biochem.* 95: 156-163
- Nemergut D.R., J.E. Knelman, S. Ferrenberg, T. Bilinski, B. Melbourne, L. Jiang, C. Violle, J.L. Darcy, T. Prest, S.K. Schmidt and A.R. Townsend. 2016. Decreases in average bacterial community rRNA operon copy number during succession. *ISME Journal* 10: 1147-1156.
- Vimercati L., S. Hamsher, Z. Schubert, S.K. Schmidt. 2016. Growth of a high-elevation *Cryptococcus* sp. during extreme freeze-thaw cycles. *Extremophiles* 20: 579-588.
- Bueno de Mesquita, CP, A.J. King, S.K. Schmidt, E.C. Farrer, K.N. Suding. 2015. Incorporating biotic factors in species distribution modeling: are interactions with soil microbes important? *Ecography* 39: 970–980.
- Liptzin, D., D. Helmig, S.K. Schmidt, B. Seoka, M.W. Williams. 2015. Winter gas exchange between the atmosphere and snow-covered soils on Niwot Ridge, Colorado, USA. *Plant Ecology & Diversity* doi 10.1080/17550874.2015.1065925
- Nemergut D.R., J.E. Knelman, S. Ferrenberg, T. Bilinski, B. Melbourne, L. Jiang, C. Violle, J.L. Darcy, T. Prest, S.K. Schmidt and A.R. Townsend. 2015. Decreases in average bacterial community rRNA operon copy number during succession. *ISME Journal* doi: 10.1038/ismej.2015.191
- Knelman J.E., E.B. Graham, N.A. Trahan, S.K. Schmidt and D.R. Nemergut. 2015. Fire severity shapes plant colonization effects on bacterial community structure, microbial biomass, and soil enzyme activity in secondary succession of a burned forest. *Soil Biol. Biochem.* 90: 161-168.
- Schmidt, S.K. and J.L. Darcy. 2015. Phylogeography of ulotrichalean soil algae from extreme high altitude and high latitude ecosystems. *Polar Biology* 38: 689-697.
- Schmidt, S.K., A.J. King, C.L. Meier, W.D. Bowman, E.C. Farrer, K.N. Suding, D.R. Nemergut. 2015. Plant-microbe interactions at multiple scales across a high-elevation landscape. *Plant Ecology and Diversity* doi: 10.1080/17550874.2014.917737
- Knelman J.E., S.K. Schmidt, R.C. Lynch, J.L. Darcy, S.C. Castle, et al. 2014. Nutrient addition dramatically accelerates microbial community succession. *PLoS ONE* 9(7): e102609. doi: 10.1371/journal.pone.0102609
- Schmidt, S.K., D. R. Nemergut, J.L. Darcy, R Lynch. 2014. Do bacterial and fungal communities assemble differently during primary succession? *Molecular Ecology* 23: 254-258.
- Lynch, R.C., J.L. Darcy, N.C. Kane, D.R. Nemergut, S.K. Schmidt. 2014. Metagenomic evidence for metabolism of trace atmospheric gases by high-elevation desert Actinobacteria. *Frontiers Microbiol.* (In Press)
- Naff, C.S., J.L. Darcy and S.K. Schmidt. 2013. Phylogeny and biogeography of an uncultured clade of Snow Chytrids. *Environmental Microbiology* 15: 2672-2680.
- Schmidt, S.K., S.R. Frankel, R.L. Wagner and R.C. Lynch. 2013. Do growth kinetics of snow-mold fungi explain exponential CO₂ fluxes through the snow? Pp 245-254, IN *Plant and microbe adaptation to cold in a changing world*. R. Imai et al. ed. Springer, New York.
- Ferrenberg, S., S. O'Neill, J. Knelman, B. Todd, S. Duggan, D. Bradley, T. Robinson, S. K. Schmidt, et al. 2013. Changes in assembly processes in soil bacterial communities following a wildfire disturbance. *ISME Journal* 7: 1102-1111

- Nemergut DR, Schmidt SK, Fukami T, O'Neill SP, Legg TM, Stanish L, Knelman JE, Darcy JL, Lynch RC, Wickey P, Ferrenberg S 2013. Patterns and Processes of Microbial Community Assembly. *Microbiol. Mol. Biol. Rev.* 77: 342-356.
- Rhodes, M., J. Knelman, R.C. Lynch, J.L. Darcy, D.R. Nemergut and S.K. Schmidt. 2013. Structure and Function of Prokaryotic Communities in Soils of Polar and High Elevation Deserts. pp. 201-213 *IN* E. Rosenberg, E. DeLong et al. (eds.), *The Prokaryotes*, DOI 10.1007/978-3-642-30123-0_37, Springer-Verlag, Berlin.
- Lynch, R.C., A.J. King, M.E. Fariás, P. Sowell, C. Vitry and S.K. Schmidt. 2012. The potential for microbial life in the highest elevation (>6000 m.a.s.l.) mineral soils of the Atacama region. *J. Geophys. Res.* 117: G02028
- Schmidt, S.K., D.R. Nemergut, B.T. Todd, R.C. Lynch, J.L. Darcy, C.C. Cleveland and A.J. King. 2012. A simple method for determining limiting nutrients for photosynthetic crusts. *Plant Ecology and Diversity* 5: 513-519.
- King, A.J., E.C. Farrer, K.N. Suding, S.K. Schmidt. 2012. Co-occurrence patterns of plants and soil bacteria in the high-alpine subnival zone track environmental harshness. *Frontiers in Microbiology* 3: doi: 10.3389/fmicb.2012.00347
- Mladenov, N., M.W. Williams, S.K. Schmidt and K. Cawley. 2012. Atmospheric deposition as a source of carbon and nutrients to an alpine catchment of the Colorado Rocky Mountains. *Biogeosciences* 9: 3337-3355.
- Marano, A.V., J.E. Edwards, F.H. Gleason, F. Bärlocher, C.L.A. Pires-Zottarelli, O. Lilje, S.K. Schmidt, S. Rasconi, M. Kagami, M.D. Barrera, T. Sime-Ngando, S. Boussiba. 2012. Quantitative methods for the analysis of zoospore fungi. *J. Microbiol. Methods* 89: 22-32.
- Schmidt, S.K., C.S. Naff and R.C. Lynch. 2012. Fungal communities at the edge: Ecological lessons from high alpine fungi. *Fung. Ecol.* 5: 443-452.
- Schmidt, S.K., R.C. Lynch, A.J. King, D. Karki, M.S. Robeson, L. Nagy, M.W. Williams, M.S. Mitter and K.R. Freeman. 2011. Phylogeography of microbial phototrophs in the dry valleys of the high Himalayas and Antarctica. *Proc. Roy Soc. B* 278: 702-708.
- Darcy, J.L., A.J. King, M.S. Robeson and S.K. Schmidt. 2011. Global distribution of *Polaromonas* phylotypes - evidence for a highly successful dispersal capacity. *PLoS ONE* 6(8): e23742.
- Robeson, M.S. A.J. King, K.R. Freeman, C.W. Birky, A.P. Martin and S.K. Schmidt. 2011. Soil Rotifer communities are extremely diverse globally but spatially autocorrelated locally. *Proc. Natl. Acad. Sci. USA* 108: 4406-4410.
- Schmidt, S.K., C.C. Cleveland, D.R. Nemergut, S.C. Reed, A.J. King and P. Sowell. 2011. Estimating phosphorus availability for microbial growth in an emerging landscape. *Geoderma* 163: 135-140.
- Nemergut, D.R., E.K. Costello, M. Hamady, C. Lozupone, L. Jiang, S.K. Schmidt, N. Fierer, A.R. Townsend, C.C. Cleveland, L. Stanish and R. Knight. 2011. Global patterns in the biogeography of bacterial taxa. *Environ. Microbiol.* 13: 135-144.
- King, A.J., K.R. Freeman, C.A. Lozupone, R. Knight and S.K. Schmidt. 2010. Biogeography and habitat modelling of high-alpine bacteria. *Nature Commun.* 1:53 doi: 10.1038/ncomms1055.
- Gleason, F, S.K. Schmidt, and A. Marano. 2010. Can zoospore true fungi grow or survive in extreme or stressful environments? *Extremophiles* 14: 417-425.
- King, A.J., D. Karki, L. Nagy, A. Racoviteanu and S.K. Schmidt. 2010. Microbial biomass and activity in high elevation soils of the Annapurna and Sagarmatha regions of the Nepalese Himalayas. *Himalayan J. Sci.* doi: 10.3126/hjs.v6i8.2303.

- Freeman, K.R., A.P. Martin, D. Karki, R.C. Lynch, M.S. Mitter, A.F. Meyer, J.E. Longcore, D.R. Simmons and S.K. Schmidt. 2009. Evidence that chytrids dominate fungal communities in high-elevation soils. *Proc. Natl. Acad. Sci. USA* 106: 18315-18320.
- Sattin, S.R., C.C. Cleveland, E. Hood, S.C. Reed, A.J. King, S.K. Schmidt, M.S. Robeson and D.R. Nemergut. 2009. Functional shifts in unvegetated, perhumid, recently-deglaciated soils do not correlate with shifts in soil bacterial community composition. *J. Microbiol.* 47: 673-681.
- Robeson, M.S., E.K. Costello, K.R. Freeman, J. Whiting, B. Adams A.P. Martin & S.K Schmidt. 2009. Environmental DNA sequencing primers for eutardigrades and bdelloid rotifers. *BMC Ecology* doi:10.1186/1472-6785-9-25.
- Seimon, A., Yager, K., Seimon, T., Schmidt, S.K., Grau, A., Beck, S., García, C., Tupayachi, A., Sowell, P., Touval, J. & Halloy, S. 2009. Changes in Biodiversity Patterns in the High Andes - Understanding the Consequences and Seeking Adaptation to Global Change. *Mountain Forum Bulletin* 9: 25-27.
- Schmidt S.K., D.R. Nemergut, A.E. Miller, K.R. Freeman, A.J. King, A. Seimon. 2009. Microbial activity and diversity during extreme freeze-thaw cycles in periglacial soils, 5400 m Elevation, Cordillera Vilcanota, Perú. *Extremophiles* 13: 807-816.
- Freeman, K.R., M.Y. Pescador, S.C. Reed, E.K. Costello, M.S. Robeson and S.K. Schmidt. 2009. Soil CO₂ flux and photoautotrophic community composition in high-elevation, “barren” soils. *Environ. Microbiol.* 11: 674-686.
- Lipson, D.A., R.K. Monson, S.K. Schmidt and M.N. Weintraub. 2009. The trade-off between growth rate and yield in microbial communities and the consequences for soil respiration in a high elevation coniferous forest. *Biogeochemistry* 95: 23-35.
- Schmidt, S.K., K.L. Wilson, R.K. Monson and D.A. Lipson. 2009. Exponential growth of “snow molds” at sub-zero temperatures: an explanation for high beneath-snow respiration rates and Q₁₀ values. *Biogeochemistry* 95: 13-21.
- Costello, E.K., S.R.P. Halloy, S.C. Reed, P. Sowell, S.K. Schmidt. 2009. Fumarole-supported islands of biodiversity within a hyperarid, high-elevation landscape on Socompa Volcano, Puna de Atacama, Andes. *Appl. Environ. Microbiol.* 75: 735-747.
- Schmidt, S.K., D.A. Lipson and K. Cherwin. 2009. Phenolic compounds and soil microbial biomass. *IN Soil Phenols*, (Adele Muscolo, ed.) Nova Publishers, New York.
- Schmidt, S.K., K.L. Wilson, A.F. Meyer, T.M. Porter, C.W. Schadt & J.M. Moncalvo. 2008. The missing fungi - New insights from culture-independent molecular studies of soil. *IN Accessing Uncultivated Microorganisms: from the environment to organisms and genomes and back*. (Karsten Zengler, ed.) ASM Press, Washington DC.
- Schmidt, S.K., S.C. Reed, D.R. Nemergut, A.S. Grandy, C.C. Cleveland, E.K. Costello, M.N. Weintraub, A.W. Hill, A.F. Meyer, A.P. Martin and J.C. Neff. 2008. The earliest stages of ecosystem succession in high-elevation (5000 m.a.s.l.), recently de-glaciated soils. *Proc. Roy. Soc. B* 275: 2793-2802.
- King, A.J., A.F. Meyer and S.K. Schmidt. 2008. High levels of microbial biomass and activity in unvegetated tropical and temperate alpine soils. *Soil Biol. Biochem.* 40: 2605-2610
- Schmidt, S.K., L.C. Sobieniak-Wiseman, S.A. Kageyama, S.R.P. Halloy and C.W. Schadt. 2008. Mycorrhizal and dark-septate fungi in plant roots above 4270 meters elevation in the Andes and Rocky Mountains. *Arctic, Antarctic and Alpine Res.* 40: 576-583.
- Schmidt, S.K., K.L. Wilson, M.M. Gebauer, A.F. Meyer and A.J. King. 2008. Phylogeny and ecophysiology of opportunistic “snow molds” from a sub-alpine forest ecosystem. *Microbial Ecology* 56: 681-687.

- Nemergut, D.R., A.R. Townsend S.R. Sattin, K. Freeman, N. Fierer, J.C. Neff, W.D. Bowman, C.W. Schadt, M. Weintraub and S.K. Schmidt. 2008. The effects of chronic nitrogen fertilization on alpine tundra soil microbial communities: Implications for carbon and nitrogen cycling. *Environ. Microbiol.* 10: 3093-3105.
- Nemergut, D.R., M.S. Robeson, R.F. Kysela, A.P. Martin, S.K. Schmidt and R. Knight. 2008. Insights and inferences about integron evolution from genomic data. *BMC Genomics* 9: 261-273. doi:10.1186/1471-2164-9-261.
- Porter, T.M., C.W. Schadt, L. Rizvi, A.P. Martin, S.K. Schmidt, L. Scott-Denton, R. Vilgalys & J.-M. Moncalvo. 2008. Widespread occurrence and phylogenetic placement of a soil clone group adds a prominent new branch to the fungal tree of life. *Molecular Phylogenetics & Evolution* 46: 635-644.
- Schmidt, S.K., E.K. Costello, D.R. Nemergut, C.C. Cleveland, S.C. Reed, M.N. Weintraub, A.F. Meyer and A.P. Martin. 2007. Biogeochemical consequences of rapid microbial turnover and seasonal succession in soil. *Ecology* 88: 1379-1385.
- Cleveland, C.C., D.R. Nemergut, A.R. Townsend, & S.K. Schmidt. 2007. Increases in soil respiration following labile carbon additions linked to rapid shifts in soil microbial community composition. *Biogeochemistry* 82: 229-240.
- Weintraub, M.N., L.E. Scott-Denton, S.K. Schmidt, and R.K. Monson. 2007. The effects of tree rhizodeposition on soil exoenzyme activity, dissolved organic carbon, and nutrient availability in a subalpine forest ecosystem. *Oecologia* 154: 327-338.
- Nemergut, D.R., S.P. Anderson, C.C. Cleveland, A.P. Martin, A.E. Miller, A. Seimon and S.K. Schmidt. 2007. Microbial community succession in unvegetated, recently-deglaciated soils. *Microbial Ecology* 53: 110-122.
- Monson, R.K., D.L. Lipson, S.P. Burns, A.A. Turnipseed, A.C. Delany, M.W. Williams and S.K. Schmidt. 2006. Winter forest soil respiration controlled by climate and microbial community composition. *Nature* 439: 711-714.
- Costello, E.K. & S.K. Schmidt. 2006. Microbial diversity in alpine tundra wet meadow soil: novel Chloroflexi from a cold, water-saturated environment. *Environmental Microbiology* 8: 1471-1486 (featured cover article).
- Oline, D.K., Schmidt, S.K., and M.C. Grant. 2006. Biogeography and landscape-scale diversity of the dominant Crenarchaeota of soil. *Microbial Ecology* 52: 480-490.
- Nemergut, D.R., E. Costello, A.F. Meyer, M.Y. Pescador, M.N. Weintraub and S.K. Schmidt. 2005. Structure and function of alpine and arctic soil microbial communities. *Res. Microbiology* 156: 775-784.
- Bardgett, R.D., W.D. Bowman, R. Kaufmann and S.K. Schmidt. 2005. Linking aboveground and belowground ecology: A temporal approach. *Trends in Ecology and Evolution* 20: 534-541.
- Colores, G.M. and S.K. Schmidt. 2005. Recovery of microbially-mediated processes in soil augmented with a pentachlorophenol-mineralizing bacterium. *Environmental Toxicology and Chemistry* 24: 1912-1917.
- Schmidt, S.K. and D.A. Lipson. 2004. Microbial growth under the snow; Implications for nutrient and alleochemical availability in temperate soils. *Plant and Soil* 259: 1-7.
- Martin, A.P., E.K. Costello, A.F. Meyer, D.R. Nemergut & S.K. Schmidt. 2004. The rate and pattern of cladogenesis in microbes. *Evolution* 58: 946-955.
- Meyer, A.F., D.A. Lipson C.W. Schadt, A.P. Martin and S.K. Schmidt. 2004. Molecular and metabolic characterization of cold tolerant, alpine soil *Pseudomonas*, sensu stricto. *Appl. Environ. Microbiol.* 70: 483-489.

- Schmidt, S.K., D.A. Lipson, R.E. Ley, M.C. Fisk and A.E. West. 2004. Impacts of chronic nitrogen additions vary seasonally and by microbial functional group in tundra soils. *Biogeochemistry* 69: 1-17.
- Cleveland, C.C., A.R. Townsend, B.C. Constance, R.E. Ley & S.K. Schmidt. 2004. Soil microbial dynamics in Costa Rica: Seasonal and biogeochemical constraints. *Biotropica* 36: 184-195.
- Nemergut, D.R., A.P. Martin and S.K. Schmidt. 2004. Integron diversity in heavy metal contaminated mine tailings and inferences about integron origin and evolution. *Appl. Environ. Microbiol.* 70: 1160-1168.
- Lipson, D.A. and S.K. Schmidt. 2004. Seasonal changes in an alpine soil bacterial community in the Colorado Rocky Mountains. *Appl. Environ. Microbiol.* 70: 2867-2879.
- Ley, R.E., M.W. Williams and S.K. Schmidt. 2004. Microbial population dynamics in an extreme environment: Controlling factors in talus soils at 3750m in the Colorado Rocky Mountains. *Biogeochemistry* 68: 313-335.
- Schadt, C.W., A.P. Martin, D.A. Lipson and S.K. Schmidt. 2003. Seasonal dynamics of previously unknown fungal lineages in tundra soils. *Science* 301: 1359-1361.
- Cleveland, C.C., A.R. Townsend, B.C. Constance and S. K. Schmidt. 2003. Soil microbial dynamics and biogeochemical cycling in lowland tropical rain forests and pastures of southwestern Costa Rica. *Ecological Applications* 13: 314-326.
- Nemergut, D. and S.K. Schmidt. 2002. Disruption of *narH*, *narJ* and *moaE* Inhibits Heterotrophic Nitrification in *Pseudomonas* strain M19. *Appl. Environ. Microbiol.* 68: 6462-6465.
- Lipson, D.A., C.W. Schadt and S.K. Schmidt. 2002. Changes in microbial community structure and function in an alpine dry meadow following spring snow melt. *Microbial Ecol.* 43: 307-314.
- Cleveland, C.C., A.R. Townsend and S.K. Schmidt. 2002. Phosphorus limitation of microbial processes in moist tropical forests: Evidence from short-term laboratory incubations and field studies. *Ecosystems* 5: 680-691.
- West, A.E. and S.K. Schmidt. 2002. Endogenous methanogenesis stimulates oxidation of atmospheric CH₄ in alpine tundra soil. *Microbial Ecol.* 43: 408-415.
- Ley, R.E. and S.K. Schmidt. 2002. Fungal and bacterial responses to phenolic compounds and amino acids in high altitude barren soils. *Soil Biol. Biochem.* 34: 989-995.
- Lipson, D.L. and S.K. Schmidt. 2002. Kinetics of microbial processes and population growth in soil. Pp 1748-1757 *In* Encyclopedia of Environmental Microbiology. Wiley, New York.
- Ley, R. and S.K. Schmidt. 2001. Microbial Biomass Levels in Barren and Vegetated High-Altitude Talus Soils. *Soil Sci. Soc. Amer. J.* 65: 111-117.
- Schadt, C.W., R.B. Mullen and S.K. Schmidt. 2001. Isolation and phylogenetic identification of a dark-septate fungus associated with the alpine plant *Ranunculus adoneus*. *New Phytol.* 150: 747-755.
- González, G., R.E. Ley, S.K. Schmidt, X. Zou and T.R. Seastedt. 2001. Soil ecological interactions: Comparisons between tropical and subalpine forests. *Oecologia* 128: 549-556.
- Schmidt, S.K., A.E. West, P.D. Brooks, L. Smith, C. Jaeger, M.C. Fisk and E. Holland. 2001. Soil-atmosphere gas exchange across an alpine tundra landscape. *In* Alpine Dynamics: The structure and function of an alpine ecosystem. (W. Bowman and T. Seastedt, eds.). Oxford University Press.
- Lipson, D.A., S.K. Schmidt and R.K. Monson. 2001. An empirical model of amino acid transformations in alpine soil. *Soil Biol. Biochem.* 33: 189-198.
- Fisk, M.C., P.D. Brooks and S.K. Schmidt. 2001. Nitrogen cycling in an alpine ecosystem. *In* Alpine Dynamics: The structure and function of an alpine ecosystem. (W. Bowman and T. Seastedt, eds.). Oxford University Press.

- Schmidt, S.K. and D.L. Lipson. 2001. Kinetics of Microbial Processes in Soil. *IN Encyclopedia of Environmental Microbiology*. Wiley, New York
- Schmidt, S.K. and K.M. Scow. 2001. Use of bioreactors and microcosms to assess the biodegradation potential of soils. Chapter 23, *IN Manual of environmental microbiology* (2nd. ed.). (M.V. Walter et al., eds.). American Society for Microbiology Press, Washington D.C.
- Schmidt, S.K., D.A. Lipson and T.K. Raab. 2000. Effects of willows (*Salix brachycarpa*) on populations of salicylate-mineralizing microorganisms in alpine soils. *J. Chem. Ecol.* 26: 2049-2057
- Lipson, D.A., S.K. Schmidt and R.K. Monson. 2000. Carbon availability and temperature control the post-snowmelt decline in alpine soil microbial biomass. *Soil Biol. Biochem.* 32: 441-448.
- Colores, G.M. and S.K. Schmidt. 1999. Colonization of contaminated soil by an introduced bacterium: effects of initial pentachlorophenol levels on the survival of *Sphingomonas chlorophenolica* strain RA2. *J. Indust. Microbiol. & Biotechnol.* 23: 326-331.
- West, A.E. and S.K. Schmidt. 1999. Acetate stimulates atmospheric CH₄ oxidation by an alpine tundra soil. *Soil Biol. Biochem.* 31: 1649-1655.
- Schmidt, S.K. and R. Ley. 1999. Microbial competition and bioavailability limit the expression of allelochemicals in natural soils. *In Principles and Practices in Plant Ecology: Allelochemical Interactions*. (S. Inderjit, K.M. Dakshini & C.L. Foy, eds.). CRC Press, Boca Raton.
- Lipson, D.A., S.K. Schmidt, C.W. Schadt and R.K. Monson. 1999. Mycorrhizal transfer of amino acid-N to the alpine sedge, *Kobresia myosuroides*. *New Phytol.* 142: 163-167.
- Lipson, D.A., T.K. Raab, S.K. Schmidt and R.K. Monson. 1999. Variation in competitive abilities of plants and microbes for specific amino acids. *Biol. Fertil. Soils* 29: 257-261.
- Jaeger, C.H., R.K. Monson, M.C. Fisk and S.K. Schmidt. 1999. Seasonal partitioning of nitrogen by plants and soil microorganisms in an alpine ecosystem. *Ecology* 80: 1883-1891.
- West, A.E., P.D. Brooks, M.C. Fisk, L. Smith, E. Holland, C.H. Jaeger, S. Babcock, R. Kai and S.K. Schmidt. 1999. Landscape patterns of CH₄ fluxes in an alpine tundra ecosystem. *Biogeochemistry* 45: 243-264.
- Lipson, D.A., S.K. Schmidt and R.K. Monson. 1999. Links between microbial population dynamics and nitrogen availability in an alpine ecosystem. *Ecology* 80: 1623-1631.
- Wickland, K.P., R.G. Striegl, S.K. Schmidt and M.A. Mast. 1999. Methane flux in subalpine wetland and unsaturated soils in the southern Rocky Mountains. *Global Biogeochemical Cycles* 13: 101-113.
- Brooks, P.D., M.W. Williams and S.K. Schmidt. 1998. Inorganic N and microbial biomass dynamics before and during spring snowmelt. *Biogeochemistry* 43: 1-15.
- Fisk, M.C., S.K. Schmidt and T. Seastedt. 1998. Topographic patterns of above- and belowground production and nitrogen cycling in alpine tundra. *Ecology* 79: 2253-2266.
- Mullen, R.B., S.K. Schmidt and C.H. Jaeger III. 1998. Nitrogen uptake during snowmelt by the snow buttercup, *Ranunculus adoneus*. *Arctic & Alpine Res.* 30: 121-125.
- West, A.E. and S.K. Schmidt. 1998. Wetting stimulates atmospheric CH₄ oxidation by alpine soil. *FEMS Microbiol. Ecol.* 25: 349-353.
- Brooks, P.D., S.K. Schmidt and M.W. Williams. 1997. Winter production of CO₂ and N₂O from alpine tundra: environmental controls and relationship to inter-system C and N fluxes. *Oecologia* 110: 403-413
- Schmidt, S.K. and K.M. Scow. 1996. Use of soil bioreactors and microcosms in bioremediation research. Chapter 16, *IN Manual of environmental microbiology*. (M.V. Walter et al., eds.). American Society for Microbiology Press, Washington D.C.

- Fisk, M.C. and S.K. Schmidt. 1996. Microbial responses to nitrogen additions in alpine tundra soils. *Soil Biology and Biochemistry* 28: 751-755.
- Colores, G.M., S.K. Schmidt and M.C. Fisk. 1996. Estimating the biomass of microbial functional groups using rates of growth-related soil respiration. *Soil Biol. Biochem.* 28: 1569-1577.
- Brooks, P.D., M.W. Williams and S.K. Schmidt. 1996. Microbial activity under alpine snowpacks. *Biogeochemistry* 32: 93-113.
- Bowman, W.D., J.C. Schardt and S.K. Schmidt. 1996. Symbiotic N₂ fixation in alpine tundra: Ecosystem input and variation in fixation rates among communities. *Oecologia* 108: 345-350.
- Hess, T.F., S.K. Schmidt and G.M. Colores. 1996. Maintenance energy model for microbial degradation of toxic chemicals in soil. *Soil Biol. Biochem.* 28: 907-915.
- Fisk, M.C. and S.K. Schmidt 1995. Nitrogen mineralization and microbial biomass N dynamics in three alpine tundra communities. *Soil Sci. Soc. Am. J.* 59: 1036-1043.
- Schmidt, S.K., G.M. Colores, T.F. Hess and P.M. Radehaus. 1995. A simple method for quantifying activity and survival of microorganisms involved in bioremediation processes *Appl. Biochem. Biotechnol.* 54: 259-270.
- Hess, T.F. and S.K. Schmidt. 1995. Improved procedure for obtaining statistically valid parameter estimates from soil respiration data. *Soil Biol. Biochem.* 27: 1-7.
- Colores, G.M., P.M. Radehaus and S.K. Schmidt. 1995. Use of a pentachloro-phenol degrading bacterium to bioremediate contaminated soil. *Appl. Biochem. Biotechnol.* 54: 271-275.
- Brooks, P.D., M.W. Williams, D.A. Walker and S.K. Schmidt. 1995. The Niwot Ridge snow fence experiment: biogeochemical responses to changes in the seasonal snowpack. pp. 293-302. *In Biogeochemistry in seasonally covered catchments*, (K.A. Tonnessen, M.W. Williams and M. Tranter, eds.) International Association of Hydrological Sciences, Wallington, U.K.
- Brooks, P.D., M.W. Williams and S.K. Schmidt. 1995. Snowpack controls on soil nitrogen dynamics in the Colorado alpine. pp. 283-292. *In Biogeochemistry in seasonally covered catchments*, (K.A. Tonnessen, M.W. Williams and M. Tranter, eds.) International Association of Hydrological Sciences, Wallington, U.K.
- Neff, J.C., W.D. Bowman, E.A. Holland, M. Fisk and S.K. Schmidt. 1994. Fluxes of nitrous oxide and methane from nitrogen amended soils in the Colorado Alpine. *Biogeochemistry* 27: 23-33
- Brooks, P.D., S.K. Schmidt, D. Sommerfeld and R. Musselman. 1994. Distribution and abundance of microbial biomass in Rocky Mountain spring snowpacks. *Proc. E. Snow Conference.* 50: 301-306.
- Mullen, R.B. and S.K. Schmidt. 1993. Mycorrhizal infection, phosphorus uptake, and phenology in *Ranunculus adoneus*: Implications for the functioning of mycorrhizae in alpine systems. *Oecologia* 94: 229-234.
- Hess, T.F., J. Silverstein and S.K. Schmidt. 1993. Effect of glucose on 2,4-dinitrophenol biodegradation kinetics in sequencing batch reactors. *Wat. Environ. Res.* 65: 73-81.
- Schmidt, S.K. 1992. A substrate-induced growth-response (SIGR) method for estimating the biomass of microbial functional groups in soil and aquatic systems. *FEMS Microbiol. Ecol.* 101: 197-206.
- Schmidt, S.K. 1992. Models for studying the population ecology of microorganisms in natural systems. pp. 31-59 *In* C.J. Hurst (ed.), *Modeling the metabolic and physiologic activities of microorganisms*. John Wiley & Sons, New York.

- Radehaus, P.M. and S.K. Schmidt. 1992. Characterization of a novel *Pseudomonas* sp. that mineralizes high concentrations of pentachlorophenol. *Appl. Environ. Microbiol.* 58: 2879-2885.
- Schmidt, S.K., R. Smith, D. Sheker, T.F. Hess, J. Silverstein and P.M. Radehaus. 1992. Interactions of microflagellates and bacteria in sequencing batch reactors exhibiting enhanced mineralization of toxic organic chemicals. *Microb. Ecol.* 23: 127-142.
- Schmidt, S.K. 1990. Ecological implications of the destruction of juglone (5-hydroxy-1,4-naphthoquinone) by soil bacteria. *J. Chem. Ecol.* 16: 3547-3549.
- Schmidt, S.K. and M.J. Gier. 1990. Coexisting bacterial populations responsible for multiphasic mineralization kinetics in soil. *Appl. Environ. Microbiol.* 56: 2692-2697.
- Hess, T., S.K. Schmidt, J. Silverstein and B. Howe. 1990. Supplemental substrate enhancement of 2,4-dinitrophenol mineralization by a bacterial consortium. *Appl. Environ. Microbiol.* 56: 1551-1558.
- Silverstein, J., M. Bowman, T. Hess, S.K. Schmidt and B. Howe. 1990. 2,4-dinitrophenol degradation and sludge floc size. *Environ. Proc. A.S.C.E.* 205-212.
- Schmidt, S.K. and M.J. Gier. 1989. Dynamics of microbial populations in soil: indigenous microorganisms degrading 2,4-dinitrophenol. *Microb. Ecol.* 18: 285-296.
- Schmidt, S.K. and F.B. Reeves. 1989. Interference between *Salsola kali* L. seedlings: Implications for plant succession. *Plant and Soil* 116: 107-110
- Scow, K.M., S.K. Schmidt and M. Alexander. 1989. Kinetics of biodegradation of mixtures of substrates in soil. *Soil Biol. Biochem.* 21: 703-708
- Schmidt, S.K. 1988. Degradation of juglone by soil bacteria. *J. Chem. Ecol.* 14: 1561-1571
- Schmidt, S.K., K.M. Scow and M. Alexander. 1987. Kinetics of para-nitrophenol mineralization by a *Pseudomonas* sp.: Effects of second substrates. *Appl. Environ. Microbiol.* 53: 2617-2623.
- Schmidt, S.K. and K.M. Scow. 1986. Mycorrhizal fungi on the Galápagos Islands. *Biotropica* 18: 236-240.
- Schmidt, S.K., M. Alexander and M.L. Shuler. 1986. Predicting threshold concentrations of organic substrates for bacterial growth. *J. Theor. Biol.* 114: 1-8.