Von Sigler, Ph.D.

Associate Professor of Environmental Microbiology
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Appointments

08/2009 - present: Associate Professor of Environmental Microbiology — University of Toledo, Toledo, OH

08/2003 – 08/2009: Assistant Professor of Environmental Microbiology — University of Toledo, Toledo, OH

04/2008 – present: Adjunct Associate Professor, Department of Public Health and Preventive Medicine — University of Toledo, Toledo, OH

2000-2003: Group leader and postdoctoral fellow — Institute for Terrestrial Ecology (ITO), Swiss Federal Institute of Technology, Zurich, Switzerland

2000-2003: Lecturer, *Terrestrial Systems Ecology* — Institute for Terrestrial Ecology (ITO), Swiss Federal Institute of Technology, Zurich, Switzerland

1995-1999: Graduate Research Assistant (Ph.D. research) — Purdue University, West Lafayette, IN

Professional Preparation

1995 – 1999 **Ph.D.**, Purdue University, Department of Agronomy Plant, Soils, and Environmental Sciences (Highest Distinction)
Dissertation title: *The Fate and Impact of Chemical and Biological Control Measures on the Microbial Ecology of the Turfgrass Ecosystem*.

1987 – 1992 **B.Sc.**, Indiana University/Purdue University, Department of Agronomy (Highest distinction)

Primary Research Projects

Identifying the geographic origins of environmental pathogens – Diagnostic genes were identified that allow the novel use of community fingerprinting to reveal the geographic origins of fecal contamination in open waters. By targeting *Escherichia coli* communities instead of isolate libraries, descriptive fingerprints of complex *E. coli* assemblages can be used to match pollution sinks to potential sources. The application of this methodology has resulted in the identification of specific geographic pollution sources at two recreational beaches in Ohio.

Identifying factors that result in the transmission of methicillin-resistant *Staphylococcus aureus* (MRSA). Initial efforts have revealed culture conditions that specifically and sensitively recover MRSA from inanimate objects, including those co-contaminated with complex assemblages of bacteria. These efforts, combined with the development of novel multiplex PCR protocols and sampling strategies, facilitated the identification of MRSA reservoirs in the non-hospital environment. Additionally, recent funding is supporting a MRSA surveillance effort in the UT Medical Center as well as an evaluation of MRSA decontamination strategies.

Characterizing the transport of pathogen communities originating in land-applied waste materials. Expertise in GIS, epidemiology, and molecular microbiology is being used to evaluate the risk to human health of the land-application of biosolids. Genetic fingerprinting of pathogen indicator bacteria has revealed that bacteria originating in biosolids are transported through artificial drainage and into surface waters. Current efforts also focus on the production of bioaerosols following biosolids application. The

bacterial component of the aerosols is currently being assessed with genetic fingerprinting to determine the risk of offsite bioaerosol movement.

Refereed Publications (* denotes Dr. Sigler's advisee)

Esseili, M. A., I. I. Kassem, V. Sigler, K. Czajkowski and A. Ames. *In Press*. Genetic evidence for the offsite transport of *E. coli* associated with land application of class B biosolids on agricultural fields. Science of the Total Environment.

Kassem, I., V. Sigler and M. Esseili. 2011. Detection and differentiation of Staphylococcus contamination on clinical surfaces using denaturing gradient gel electrophoresis (DGGE). Journal of Hospital Infection 78:187-193.

*Eby, J. and V. Sigler. 2011. The Prevalence of antibiotic-resistant bacteria on mosquitoes collected from a recreational park. *The Proceedings of the* 24th National Conference for Undergraduate Research, April 15-17, Mizzoula, Montana.

Wang, Q., I. *Kassem, V. Sigler and C. Gruden. 2009. The Effect of Different Capping Regimes on the Microbial Communities in Freshwater Sediments. Water Environment Research 81:441-449.

Kassem, I., V. Sigler and M. Esseili. 2008. Occurrence of *mecA* in nonstaphylococcal pathogens in surface waters**.** Journal of Clinical Microbiology 46: 3868-3869.

Esseili, M. V. Sigler and I. Kassem. 2008. Optimization of DGGE community fingerprinting for characterizing *Escherichia coli* communities associated with fecal pollution. Water Research 42:4467-4476.

*Kassem, I., P. Joshi, V. Sigler, S. Heckathorn and Q. Wang. 2008. Effect of elevated CO_2 and drought on soil microbial communities associated with *Andropogon gerardii*. Journal of Intergrative Plant Biology 50:1406-1415.

Elk, M., I. Kassem and V. Sigler. 2008. Screening public surfaces for methicillin-resistant staphylococci. The Proceedings of the 22nd National Conference for Undergraduate Research, April 10-12, Salisbury University, Maryland.

Foley, M., V. Sigler and C. Gruden. 2008. A multiphasic characterization of the impact of the herbicide acetochlor on freshwater bacterial communities. International Society for Microbial Ecology Journal 2:56-66.

Kassem, I., V. Sigler and M. Esseili. 2007. Public computer surfaces are reservoirs for methicillin-resistant staphylococci. International Society for Microbial Ecology Journal 1**:**265–268.

Lohner, R.N., V. Sigler, C.M. Mayer and C. Balogh. 2007. A comparison of the benthic bacterial communities within and surrounding *Dreissena* clusters in lakes. Microbial Ecology 54:469-477.

Sigler, V. and L. Pasutti*. 2006. Evaluation of denaturing gradient gel electrophoresis to differentiate *E. coli* communities in secondary environments. Environmental Microbiology 8:1703-1711.

Yang, Y., M. *Pesaro, V. Sigler, and J. Zeyer. 2005. Identification of microorganisms involved in reductive dehalogenation of chlorinated ethenes in an anaerobic microbial community. Water Research 39: 3954-3966.

Kleikemper, J., S.A. Pombo, M.H. Schroth, W.V. Sigler, M. Pesaro*, and J. Zeyer. 2005. Activity and diversity of methanogens in a petroleum hydrocarbon-contaminated aquifer. Applied and Environmental Microbiology 71: 149-158.

Sigler, W.V. and J. Zeyer. 2004. Colony forming analysis of bacterial community succession in deglaciated soils indicates pioneer stress tolerant opportunists. Microbial Ecology 48:316-323.

Sigler, W.V., C. Miniaci*, and J. Zeyer. 2004. Electrophoresis time impacts the denaturing gradient gel electrophoresis-based assessment of bacterial community structure. Journal of Microbiological Methods 57:17-22.

*Bürgmann, H., F. Widmer, W.V. Sigler, and J. Zeyer. 2004. New molecular screening tools for the analysis of free-living diazotrophs in soil. Applied and Environmental Microbiology 70:240-247.

Gremion, F., A. Chatzinotas, K. Kaufmann, 2004. W.V. Sigler, and H. Harms. Impacts of heavy metal contamination and phytoremediation on the microbial community during a twelve-month microcosm experiment. FEMS Microbiology Ecology 48:273-283.

Sigler, W.V., R. Bachofen, and J. Zeyer. 2003. Molecular characterization of endolithic cyanobacteria inhabiting exposed dolomite in central Switzerland. Environmental Microbiology 5:618-627.

*Bürgmann, H., F. Widmer, W.V. Sigler, and J. Zeyer. 2003. mRNA extraction and RT-PCR protocol for detection of *nifH* gene expression of *Azotobacter vinelandii* in soil. Applied and Environmental Microbiology 69:1928-1935.

Sigler, W.V., Z.J. Reicher, C.S. Throssell, M. Bischoff, and R.F. Turco. 2003. Sorption and degradation of selected fungicides in the turfgrass canopy. Water Air and Soil Pollution 142:311-326.

Sigler, W.V., S. Crivii*, and J. Zeyer. 2002. Bacterial succession in glacial forefield soils characterized by community structure, activity and opportunistic growth dynamics. Microbial Ecology 44:306-316.

Sigler, W.V. and R.F. Turco. 2002. The impact of chlorothalonil application on soil bacterial and fungal populations as assessed by denaturing gradient gel electrophoresis. Applied Soil Ecology 21:107-118.

Sigler, W.V. and J. Zeyer. 2002. Microbial diversity and activity along the forefields of two receding glaciers. Microbial Ecology 43:397-407.

*Kleikemper, J., M. Schroth, W.V. Sigler, M. Schmucki, S.M. Bernasconi, and J. Zeyer. 2002. Activity and diversity of sulfate-reducing bacteria in a petroleum hydrocarbon-contaminated aquifer. Applied and Environmental Microbiology 68:1516-1523.

Sigler, W.V., C.H. Nakatsu, Z.J. Reicher, and R.F. Turco. 2001. Fate of the biological control agent *Pseudomonas aureofaciens* TX-1 after application to turfgrass. Applied and Environmental Microbiology 67:3542-3548.

Book Chapters

Sigler, W.V. and J. Zeyer. 2002. Molecular and cultural assessment of copiotrophic bacteria in the forefield of a receding glacier. *In* R. Bottarin and U. Tappeiner (eds.) Interdisciplinary Mountain Research, pp. 130-141. Blackwell Science, Berlin, Germany.

Sigler, W.V., C.H. Taylor, C.S. Throssell, M. Bischoff, and R.F. Turco. 2000. Environmental fates of fungicides in the turfgrass environment. *In* J.M. Clark and M.P. Kenna (eds.) Fate and Management of Turfgrass Chemicals, pp. 127-163. ACS Press, Washington DC.

Grants

Co-PI - **Prevention of Surface Water Contamination from Biosolids Application**. Funded by: EPA-GLRI. 9/2010 - 06/2012. $550,228. PI: K. Czajkowski, Co-PIs: A. Spongberg, and D. Dwyer.

PI - **A Holistic Watershed Approach to Health at Huntington Beach**. Funded by: EPA GLRI. 9/2010 - 08/2012. $129,059

PI - **Prevalence and Behavior of MRSA on Synthetic Turfgrass Systems**. Funded by: NFL Charities. 01/2011 – 06/2012. $99,999. Co-PI: R. Turco, Purdue University.

Co-PI - **Monitoring agricultural sewage sludge, 2010**. Funded by: USDA-CSREES. 7/2010 - 06/2011. $468,000. PI: K. Czajkowski, Co-PIs: A. Spongberg, R. Vincent and S. Milz.

Co-PI - **Monitoring agricultural sewage sludge, 2009**. Funded by: USDA-CSREES. 07/2009 - 06/2011. $785,304. PI: K. Czajkowski, Co-PIs: A. Spongberg, R. Vincent and M. Bisesi.

PI – **Undergraduate Research and Mentoring in Environmental Biology at the Land-Lake Ecosystem Interface**. Funded by: National Science Foundation. 01/2009 – 12/2013. $802,061. Co-PI: C. Stepien.

Co-PI - **Monitoring of agricultural sewage sludge**. Funded by: USDA-CSREES. 07/2008 - 06/2009. $836,503. PI: K. Czajkowski, Co-PIs: A. Spongberg, R. Vincent (Bowling Green State University) and M. Bisesi.

PI - **Surveillance of methicillin-resistant *Staphylococcus aureus* in the UT Medical Center**. Funded by: University of Toledo deArce Memorial Endowment Fund in Support of Medical Research and Development. 05/2008 – 05/2009. $17,000.

PI - **Community Molecular fingerprinting to identify the spatial origins of microbial contamination in Cuyahoga County within the Rocky River watershed IV**. Funded by: Cuyahoga County Board of Health. 06/2008 – 10/2009. $6000.

Co-PI - **Potential environmental and health impacts of sewage sludge applications**. Funded by: USDA-CSREES. 07/2007 – 06/2008. $849,000. PI: K. Czajkowski, Co-PIs: M. Bisesi, University of Toledo, B. Vincent, Bowling Green State University.

Co-PI - **Assessing the role of turbid river plumes in the development of microcystis blooms in Lake Erie with molecular techniques**. Funded by: Ohio SeaGrant. 07/2007 - 06/2009. $105,268. PI: T. Bridgeman, T., Co-PIs: C. Mayer, S. Heckathorn (all University of Toledo).

Co-PI – **Bobbing for benthos: The effects of foraging in hypoxic "dead zones" on Lake Erie sport fish**. Funded by: UT Interdisciplinary Research Initiation Awards. 08/2007 – 07/2009. $39,661. PI: T. Bridgeman, T., Co-PIs: R. Ruch, J. Turner (all University of Toledo).

PI - **Community Molecular fingerprinting to identify the spatial origins of microbial contamination in Cuyahoga County within the Rocky River watershed III**. Funded by: Cuyahoga County Board of Health. 08/2007 – 06/2008. $4000.

PI - **Tracking fecal pollution at recreational beaches**. Funded by: Ohio Lake Erie Commission, Lake Erie Protection Fund Small Grants. 01/2008–12/2008. $14,581.

Co-PI - **Potential environmental and health impacts of sewage sludge applications**. Funded by: USDA-CSREES, 07/2006 – 06/2009. $1,192,586. PI: K. Czajkowski, Co-PIs: M. Bisesi, University of Toledo, B. Vincent, Bowling Green State University.

PI - **Community Molecular fingerprinting to identify the spatial origins of microbial contamination in Cuyahoga County within the Rocky River watershed II**. Funded by: Cuyahoga County Board of Health, 07/2006 – 11/2006. $11,788.

PI - **Community molecular fingerprinting to identify the spatial origins of microbial contamination in Van Wert County II**. Funded by: Van Wert Soil and Water Conservation District, 11/2006 – 02/2007. $5894.

PI - **Community molecular fingerprinting to identify the spatial origins of microbial contamination in Van Wert County I**. Funded by: Van Wert Soil and Water Conservation District, 06/2006 – 08/2006. $5894.

PI - **Community Molecular fingerprinting to identify the spatial origins of microbial contamination in Cuyahoga County within the Rocky River watershed I**. Funded by: Cuyahoga County Board of Health, 11/2005 – 05/2006. $5884.

Co-PI – **Monitoring of agricultural sewage sludge applications and possible health effects in NW Ohio**. Funded by: USDA-CSREES, 07/2005 – 06/2008. $1,194,995. PI: K. Czajkowski, Co-PIs: M. Bisesi, A. Spongberg, D. Dwyer, University of Toledo.

PI - **Population-based molecular-tracking of fecal coliform reservoirs in Maumee Bay**. Funded by: Ohio Lake Erie Commission, Lake Erie Protection Fund Large Grants. 01/2005–12/2006. $53,945. Co-PI: D. Dwyer, University of Toledo.

Co-PI - **Plant Phytoremediation Research III**. Funded by: USDA, 08/2004-07/2006. $528,000. PI: D. Dwyer, Co-PIs: A. Spongberg, D. Krantz, University of Toledo.

Co-PI - **Plant Phytoremediation Research II**. Funded by: USDA. 09/2003-08/2005. $595,156. PI: D. Dwyer, Co-PIs: A. Spongberg, D. Krantz, University of Toledo.

PI - **Junior Faculty Kohler International Travel Grant to attend the 2004 ISME Symposia in Cancun, Mexico**. Funded by: The Kohler Fund, University of Toledo. $500.

Presentations and published abstracts (* Dr. Sigler's graduate student or advisee)

*Pekalska, A., V. Sigler and J. Lis. 2012. Determining the geographic sources of *E. coli* pollution to a recreational beach. *To be presented at the* Ohio Section American Water Works Association Annual Meeting, September 18-21, Dayton, OH.

Keller, M, Z. Johnson, and V. Sigler. 2012. Are MRSA infections among NFL players related to the playing surface? *Presented at the* Ohio Branch of the American Society for Microbiology Annual Meeting, April 20-21, Mason, OH.

*Pekalska, A., V. Sigler and J. Lis. 2012. Linking geographic sources of *E. coli* to recreational beach pollution. Presented at the Ohio Branch of the American Society for Microbiology Annual Meeting, April 20-21, Mason, OH.

*Pekalska, A., V. Sigler and J. Lis. 2012. Identifying watershed regions contributing *E. coli* pollution to a recreational beach. Presented at the Michigan Academy of Science Annual Meeting, March 17, Alma, MI.

*Deardurff, R., D. Dwyer and V. Sigler. 2012. Can we control the movement of pathogens associated with

CAFO runoff? *Presented at the* Michigan Academy of Science Annual Meeting, March 17, Alma, MI.

Keller, M, Z. Johnson, and V. Sigler. 2012. Are MRSA infections among NFL players related to the playing surface? *Presented at the* Michigan Academy of Science Annual Meeting, March 17, Alma, MI.

Sigler, V. 2012. Perspectives on the role of biosolids in environmental pollution. Presented at the University of Toledo Lake Erie Center Symposium Series, February 16, Oregon, OH.

*Deardurff, R. and V. Sigler. 2011. Transport of Pathogens through Saturated Soils. Presented at the Graduate Student Association Midwest Graduate Research Symposium. March 26, Toledo, OH.

*Deardurff, R. and V. Sigler. 2011. Transport of *E. coli* O157:H7 through Saturated Soils. Presented at the Ohio Branch of the American Society for Microbiology Annual Meeting, April 8-9, Athens, OH.

Sigler, V. 2010. Environmental CSI: Using biotechnology to identify microbial pollution. Presented at the Henry Ford Community College Biotechnology Day, November 18, Dearborn, MI.

*Deardurff, R. and V. Sigler. 2010. Adsorption of *E. coli* O157:H7 Associated with Concentrated Animal Feeding Operations. Presented at the Ohio Branch of the American Society for Microbiology Annual Meeting, April 16-17, Mason, OH.

*Chatterjee, K. and V. Sigler. 2011. Periodic short-term bioaerosol sampling reveals a more representative airborne bacteria community than traditional air sampling. Presented at the Ohio Branch of the American Society for Microbiology Annual Meeting. April 9th. Athens, OH.

*Chatterjee, K. and V. Sigler. 2011. Periodic bioaerosol sampling recovers a more representative bacterial community than traditional air sampling methods.Presented at the Midwest Graduate Research Symposium. March 26th. Toledo, OH.

*Chatterjee, K. and V. Sigler. 2010. DGGE fingerprints from periodic bioaerosol sampling uncover a more representative airborne bacteria community than conventional air sampling.Presented at the Sigma Xi Annual Meeting. November 13. Raleigh, NC.

*Chatterjee, K. and V. Sigler. 2010. Periodic bioaerosol sampling recovers a different airborne bacteria community than conventional, point-in-time sampling.Presented at the Ohio Branch of the American Society for Microbiology Annual Meeting. April 17. Mason, OH.

*Lindelof, K. and V. Sigler. 2010. Contribution of Biosolid-Derived Bioaerosols to the Airborne Microbial Population. *Presented at the* Ohio Branch of the American Society for Microbiology Annual Meeting. April 17. Mason, OH.

*Eby, J. and V. Sigler. 2010. The Prevalence of Antibiotic-Resistant Bacteria on Mosquitoes Collected from a Recreational Park. Presented at the National Conference for Undergraduate Research. April 11. Missoula, MT.

Sigler, V., S. Hensley, A. Smith, K.A.E. Woodman, H. Nightingale and I. Kassem*. 2010. How clean is your hospital: Assessment of staphylococci contamination in isolation rooms. Presented at the UTMC Infection Prevention Week Event, October 17 - 23, Toledo, OH.

Sigler, V., S. Hensley, A. Smith, K.A.E. Woodman, H. Nightingale and I. Kassem*. 2009. Assessment of staphylococci contamination in isolation rooms: Combining traditional and molecular fingerprinting analyses. Presented at the APIC 2009 Annual Conference, June 7-11, Fort Lauderdale, FL.

Sigler, V. Public health microbiology and environmental pathogens. Presented at the EPINet Use of indicators for monitoring water quality hands-on experience. May 6, 2009, Columbus, OH.

Kassem, I., V. Sigler and W. Rogers. 2008. Detection and differentiation of *Staphylococcus* bacteria using denaturing gradient gel electrophoresis (DGGE). Presented at the 108th General Meeting of the American Society for Microbiology, June 1-5, Boston, MA.

Esseili, M., V. Sigler, I. Kassem and K. Esseili. 2008. Evidence for the offsite transport of pathogen indicator bacteria associated with land-application of biosolids. Presented at the 108th General Meeting of the American Society for Microbiology, June 1-5, Boston, MA.

Choc, S.J., D.F. Dwyer, V. Sigler, P. Struffolino and C. deSaint Victor. 2008. Source identification and monitoring for a wetlands solution to reduce *Escherichia coli* at Maumee Bay State Park, Oregon, OH. Presented at the 108th General Meeting of the American Society for Microbiology, June 1-5, Boston, MA.

Bridgeman, T. and V. Sigler. 2008. *Lyngbya wollei* blooms in western Lake Erie 2006-2007. Presented at the 51st Annual Conference of the International Association of Great Lakes Research, May 19-23, Peterborough, Ontario, CA.

Sigler, V. 2008. Public health microbiology and environmental pathogens. Presented at the EPINet Use of indicators for monitoring water quality hands-on experience, April 11, Columbus, OH.

Esseili, M, V. Sigler, I. Kassem and K. Esseili. 2008. Evidence for the offsite transport of *E. coli* associated with land-application of biosolids into surface water. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, March 29, Muncie, IN.

Kassem, I., V. Sigler and M. Esseili. 2008. The detection of the *mecA* gene in antibiotic-resistant bacterial pathogens inhabiting fresh waters. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, March 29, Muncie, IN.

Sigler, V. 2007. Where is it coming from? A community fingerprinting approach to microbial pollution source tracking. Presented at the Environmental Pathogens Information Network Regional Workshop, September 14, Chicago, IL.

Esseili, M., V. Sigler and I. Kassem. 2007. A new method for identifying sources of fecal pollution: DGGE fingerprinting of *E. coli* communities. Presented at the 107th General Meeting of the American Society for Microbiology, May 21-25, Toronto, CA.

* Kassem, I., V. Sigler and M Esseili*. 2007. Public computer surfaces are reservoirs for methicillin-resistant staphylococci. Presented at the 107th General Meeting of the American Society for Microbiology, May 21-25, Toronto, CA.

Wang, X., I. Kassem, V. Sigler and C. Gruden. 2007. The effect of capping on the ebullition potential and microbial ecology of contaminated surface sediments. Presented at the 107th General Meeting of the American Society for Microbiology, May 21-25, Toronto, CA.

Sigler, 2007. Tracking microbes: established and emerging roles of environmental pathogens. Presented at the University of North Carolina School of Public Health, May 30, 2007, Chapel Hill, NC.

Sigler, V. 2007. Monitoring recreational waters: Indicators, pathogens and the environment. Presented at the Environmental Pathogens Information Network Regional Workshop, February 2, Merrillville, IN.

Sigler, V. 2007. Small successes: Library-independent methods to identify microbial pollution sources. Presented at the USDA-CSREES Water Conference, January 30, Savannah, GA.

Sigler, V. 2007. The use of genetic fingerprinting to identify a geographic pollution source at Huntington Beach. Presented at the Ohio–Lake Erie Beach Conference, January 18, Parma, OH.

Sigler, V. 2006. On the trail of microbes: application of molecular fingerprinting to characterize environmental pathogen transmission. Presented at the Medical University of Ohio Department of Medical Microbiology and Immunology Seminar Series, October 11, Toledo, OH.

Kassem, I., V. Sigler, and M. Esseili. 2006. Pathogens under our fingertips: The colonization of computer keyboards with antibiotic resistant staphylococci. Presented at the 2006 Sigma Xi Annual Meeting and Student Research Conference, November 2 - 5, Detroit, MI.

Esseili, M., V. Sigler, and I. Kassem. 2006. DGGE-based community fingerprinting: Rapid identification of fecal contamination sources. Presented at the 2006 Sigma Xi Annual Meeting and Student Research Conference, November 2 - 5, Detroit, MI.

Terry, D., V. Sigler, and I. Kassem. 2006. The effect of biosolids application on the bacterial abundance in contrasting soils. Presented at the 2006 Sigma Xi Annual Meeting and Student Research Conference, November 2 - 5, Detroit, MI.

*Huang, X., and V. Sigler. 2006. *E. coli* Seasonal Dynamics and Source Identification at Lake Erie Beach, OH. Presented at the Sigma Xi Annual Meeting and Student Research Conference, November 2-5, Detroit, MI.

Kassem, I., V. Sigler, and M. Esseili. 2006. Are bacteria on computers a latent public health threat? Presented at BioOhio 2006, October 23 - 24, Columbus, OH.

Esseili, M., V. Sigler, and I. Kassem. 2006. Rapid identification of fecal pollution: A community fingerprinting approach. Presented at BioOhio 2006, October 23 - 24, Columbus, OH.

Mayer, C.M., L. G. Rudstam, E.L. Mills, B. Zhu, R. Johnson, R.N. Lohner, and W.V. Sigler. 2006. Habitat changes: zebra mussels, ecosystem engineering and the benthic connection. Presented at the AFS Annual Meeting, Lake Placid, September 10 – 14, Lake Placid, NY.

Wang, Q., I. Kassem*, V. Sigler, and C. Gruden. 2006. The impact of cap-type on the structure and activity of microbial communities in contaminatand sediments. Presented at the 106th General Meeting of the American Society for Microbiology, May 20 - 25, Orlando, FL.

*Kassem, I., P. Joshi, V. Sigler, S. Heckathorn, and Q. Wang. 2006. The impact of global environmental changes on plant-microbial interactions. Presented at the 106th General Meeting of the American Society for Microbiology, May 20 - 25, Orlando, FL.

Esseili, M., V. Sigler, and I. Kassem. 2006. Source Tracking of *E. coli* potential application of DGGE. Presented at the 49th Annual Conference of the International Association of Great Lakes Research, May 22 - 26, Windsor, CA.

*Huang, X. and V. Sigler. 2006. Population-based molecular tracking of *E. coli* at Lake Erie Beach and Huntington Beach (Ohio). Presented at the 49th Annual Conference of the International Association of Great Lakes Research, May 22 - 26, Windsor, CA.

Foley, M.E., Gruden, C., and Sigler, W.V. 2006. Toxicity of acetochlor to aquatic bacteria and its degradation in stream water. Presented at the 49th Annual Conference of the International Association of Great Lakes Research, May 22 - 26, Windsor, CA.

Scarbro, J.L., D.F. Dwyer, and V. Sigler. 2006. Microbial transport through the vadose zone of a biosolids amended cropland: Implications for Maumee Bay water quality. Presented at the 49th Annual Conference of the International Association of Great Lakes Research, May 22 - 26, Windsor, CA.

Terry, D., V. Sigler, and I. Kassem. 2006. Characterization of the composition of the bacterial communities and potential pathogens in field applied biosolids. Presented at the 115th annual meeting of The Ohio Academy of Science, April 22, Dayton, OH.

Wang, Q., I. Kassem*, V. Sigler, and C. Gruden. 2006. The effect of different capping regimes on the microbial communities in contaminated sediments. Presented at the 115th annual meeting of The Ohio Academy of Science, April 22, Dayton, OH.

Kassem, I., V. Sigler, M. Esseili, and D. Terry*. 2006. Detection and genotyping of *Staphylococcus aureus* in the environment using multiplex- and rep-PCR. Presented at the 115th annual meeting of The Ohio Academy of Science, April 22, Dayton, OH.

Esseili, M., V. Sigler, and I. Kassem. 2006. Developing a DGGE-based *E. coli* community fingerprinting method for bacterial source tracking. Presented at the 115th annual meeting of The Ohio Academy of Science, April 22, Dayton, OH.

*Huang, X. and V. Sigler. 2006. DNA fingerprinting for source tracking of *E. coli* at Lake Erie Beach. Presented at the 115th annual meeting of The Ohio Academy of Science, April 22, Dayton, OH.

Kassem, I., V. Sigler, M. Esseili, and D. Terry*. 2006. Optimization of PCR-based Methods for Studying *Staphylococcus aureus*: an Emerging Environmental Pathogen. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, April 21 - 22, Mason, OH.

Wang, Q., I. Kassem*, V. Sigler, and C. Gruden. 2006. The response of microbial communities inhabiting contaminated sediments to different capping regimes.. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, April 21 - 22, Mason, OH.

*Kassem, I., P. Joshi, V. Sigler, S. Heckathorn, and Q. Wang. 2006. The Impact of Elevated CO_2 and Draught on Plant-Microbial Interactions. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, April 21 - 22, Mason, OH.

*Esseili, M., V. Sigler, I. *Kassem. 2006. DGGE community fingerprinting to track the soucres of *E. coli* contamination. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, April 21 - 22, Mason, OH.

*Huang, X. and V. Sigler. 2006. DNA fingerprinting for source tracking of *E. coli* at Lake Erie Beach, Northwest Ohio. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, April 21 - 22, Mason, OH.

*Terry, D., V. Sigler, and I. *Kassem. 2006. The impact of class B biosolids on soil bacteria. Presented at the annual meeting of the Ohio Branch of the American Society for Microbiology, April 21-22, Mason, OH.

Sigler, V. 2006. On the trail of microbes: application of molecular fingerprinting to characterize pathogen transmission. Presented at Washington State University, February 22, Pullman, WA.

Sigler, V. 2006. Molecular applications in bacterial source tracking: current perspectives and small victories. Presented at the USDA-CSREES Water Quality Conference, February 5-9, San Antonio, TX.

*Kassem, I., V. Sigler, and M. *Esseili. 2006. Multiplex PCR-based detection and genotyping of *Staphylococcus aureus* in environmental matrices. Presented at the USDA-CSREES Water Quality Conference, February 5-9, San Antonio, TX.

*Esseili, M., V. Sigler, and I. Kassem. 2006. A DGGE-based *E. coli* community profiling method for bacterial source tracking. Presented at the USDA-CSREES Water Quality Conference, February 5-9, San Antonio, TX.

*Esseili, M., V. Sigler, and I. Kassem. 2005. Assessment of potential gene targets for DGGE profiling and source tracking of *Escherichia coli* in the environment. Presented at the 67th Ohio Section American Water Works Association (OAWWA), September 19 – 22, Columbus, Ohio.

*Kassem, I., D. *Terry, M. *Esseili, and V. Sigler. 2005. Enumeration and PCR-based detection of *Escherichia coli* and *Staphylococcus aureus* in field-applied class B sludge. Presented at the 67th Ohio Section of the American Water Works Association (OAWWA), September 19-22, Columbus, OH.

*Esseili, M., V. Sigler, and I. Kassem. 2005. Screening Potential *Escherichia coli* Gene Targets for DGGE-Based Bacterial Source Tracking. Presented at the IUMS XI International Congress of Bacteriology and Applied Microbiology meeting, July 23 - 28, San Francisco, CA.

*Kassem, I., V. Sigler, and D. Dwyer. 2005. Characterization of the microbial communities in dredge sediment from a confined disposal facility. Presented at the IUMS XI International Congress of Bacteriology and Applied Microbiology, July 23 – 28, San Francisco, CA.

*Kassem, I., V. Sigler, and D. Dwyer. 2005. Molecular and enzymatic analysis of the microbial communities in dredged sediments. Presented at 105th General Meeting of the American Society for Microbiology, June 5-9, Atlanta, GA.

Sigler, W.V. 2005. DGGE-based assessment of structural differences in environmental *Escherichia coli* communities. Presented at the 48th Annual Conference of the International Association for Great Lakes Research, May 23 – 27, Ann Arbor, MI.

*Lohner, R.N., C. *Balogh, V. Sigler, and C. Mayer. 2005. Effects of *Dreisenna* clusters on the benthic microbial community of Lakes. Presented at the 48th Annual Conference of the International Association for Great Lakes Research, May 23 – 27, Ann Arbor, MI.

*Kassem, I., V. Sigler, and D. Dwyer. 2005. The impact of sediment dredging on the microbial communities in Toledo Harbor. Presented at the 26th annual Sigma Xi Student Research Symposium, April 15, Toledo, OH.

Sigler, V. 2005. DGGE-based assessment of structural differences in environmental *Escherichia coli* populations. Presented at the USDA-CSREES Water Quality Conference, February 7-9, La Jolla, CA.

Sigler, V. and L. Keinath*. 2004. DGGE analysis of *E. coli* community structure as a potential bacterial source-tracking tool: a comparison with BOX-PCR. Presented at the Great Lakes Beach Association Conference, November 30-December 1, Parma, OH.

*Struffolino, P., V. Sigler, and D. Dwyer. 2004. Novel Sediment Traps Reveal Role of Suspended Sediment in *E. coli* Transport. Presented at the National Beaches Conference, October 13-15, Mission Valley, San Diego, CA.

*Kassem, I., V. Sigler, and D. Dwyer. 2004. Structural and functional assessment of microbial communities at King Road Landfill. Presented at the 26th annual Sigma Xi Student Research Symposium, May 6, Toledo, OH.

Sigler, V. 2003. Initial development of microbial populations as bio-indicators to assess ecosystem disturbance. Presented at the Ohio Environmental Protection Agency, 8 December 2003, Columbus, Ohio.

Sigler, V. 2003. Lessons from the Swiss Alps: toward developing microbial bio-criteria to assess wetland ecosystem integrity. Presented at the University of Toledo Department of Chemical and Environmental Engineering seminar series, November 14, 2003, Toledo, Ohio.

Professional Affiliations

University of Toledo Institutional Biosafety Committee
Maumee Bay Bacterial Task Force
International Society for Microbial Ecology
American Society for Microbiology
Environmental Pathogens Information Network (EPINet)

Ad hoc reviewer for the journals *Microbial Ecology, American Journal of Infection Control, Pedosphere, The European Journal of Soil Science*, *Molecular Ecology*, *Environmental Research, Environmental Microbiology, Nutrition Journal* and *Applied and Environmental Microbiology*

Teaching Experience *Course includes a laboratory component

University of Toledo

EEES 1170	Microbes and Society	2007 - present
EEES 4150/5150	Evolution	2005 - present
EEES 4550/5550	Methods of Microbial Investigation	2005
EEES 4540/5540	Microbial Ecology	2004, 2006
EEES 6810/8810	Writing for the Environmental Sciences	2004, 2005
EEES 6930/8930	Graduate Seminar	2010
EEES 6980 (independent study)	Aquatic Microbiology	2004
	Transmission of Environmental Pathogens	2008
EEES 3900	Scientific Writing and Communication (WAC)	2008 - present

Swiss Federal Institute of Technology

SyTe 03-530	Terrestrial Systems Ecology*	2000 - 2002

Purdue University

AGRY 580	Soil Microbiology*	1999
AGRY 510	Turfgrass Science*	1998, 1999
AGRY 210	Turfgrass Management	1998

Undergraduate Students Supervised

University of Toledo

Zeke Johnson (University of Toledo), Department of Environmental Sciences Undergraduate Research and Mentoring Fellow. Project title: *Does athletic turf promote MRSA infections?* 05/2011 – present.

Jacob Eby (University of Toledo) 2011. UT Undergraduate Honors Program. Project title: *The Prevalence of Antibiotic-Resistant Bacteria on Mosquitoes Collected from a Recreational Park*. 06/2009 – 11/2010.

Ashley Fincher (University of Toledo), Summer Laboratory Fellow. Project title: *Surveillance of methicillin-resistant Staphylococcus aureus in the UT Medical Center*. 05/2008 – present.

Katie Pyzikam (University of Dayton), Summer Laboratory Fellow. Project title: *Molecular fingerprinting of bacteria isolated in bioaerosols originating in biosolids-amended soils*. 05/2008 – 08/2008.

Kanistha Chatterjee (University of Toledo), Department of Environmental Sciences intern. Project title: *Determining the role of biosolids applications to agricultural fields in* E. coli *pollution of surface water*. 05/2008 - 08/2008.

Michael Elk (University of Toledo), UT Undergraduate Honors Program. Project title: *Characterizing community-associated antibiotic resistant bacteria*. 06/2006 – 11/2006.

Will Rogers (University of Dayton), National Science Foundation Research Experience for Undergraduates (REU) Summer Fellow. Project title: *Identification of* Staphylococcus spp*. using DNA fingerprinting*. 05/2007-07/2007.

Kristen Gardner (University of Toledo), National Science Foundation Research Experience for Undergraduates (REU) Summer Fellow. Project title: E. coli *community fingerprinting to identify sources of bacterial pollution in Van Wert County (Ohio)*. 05/2006-07/2006.

Ritu Raina (Baldwin-Wallace College), National Science Foundation Research Experience for Undergraduates (REU) Summer Fellow. Project title: *Evaluation of molecular fingerprinting methods for host classification of* Staphylococcus aureus*.* 05/2006-07/2006.

Damien Terry (North Carolina State University), National Science Foundation Research Experience for Undergraduates (REU) Summer Fellow. Project title: *Detection and enumeration of Escherichia coli and Staphylococcus aureus in land-applied biosolids*. 05/2005-07/2005.

Lauren Keinath (Michigan State University), National Science Foundation Research Experience for Undergraduates (REU) Summer Fellow. Project title: *Development and application of a novel genetic marker to characterize the origins of fecal pollution in the Maumee watershed*. 05/2004-07/2004.

Csilla Balogh (University of Veszprem, Hungary), Lake Erie Research Center Summer Fellow. Project title: *Impact of invasive zebra mussels (Dreisenna polymorpha) on benthic microbial community structure and metabolic diversity.* 05/2004-07/2004.

Graduate Students Supervised

University of Toledo

Graduate degrees in progress (all advised by Von Sigler)

Breanna Caton, Ph.D. Project title: *Co-evolution of invasive mosquitos and viral pathogens*. Started 01/2012.

Marcus Keller, M.S. Project title: *The role of synthetic turf athletic fields in MRSA infection among athletes*. Started 06/2011.

Aneta Pekalska, M.S. Project title: *The identification of watershed sources of* E. coli *impacting a suburban recreational beach*. Started 01/2011.

Robert Deardurff, M.S. Project title: *Impact of manure runoff on the survival of bacteria and viral pathogens.* Started 08/2009.

Chenxi Wu, Ph.D. Project title: *Prevalence and impact of pharmaceuticals in land applied biosolids.* Started 08/2006.

Damien Terry, M.S. Project title: *Fate and impact of environmental pathogens following application of biosolids to agricultural soils*. Started 08/2005, currently on leave.

Active committee member

Linsdey Pierce,	Ph.D.	Department of Environmental Sciences.	Main advisor: Carol Stepien
Zach Rinkes	Ph.D.	Department of Environmental Sciences.	Main advisor: Michael Weintraub
Ryan Jackwood	M.S.	Department of Environmental Sciences.	Main advisor: Daryl Dwyer
Danielle Long	M.S.	Department of Environmental Sciences.	Main advisor: Daryl Dwyer
Mary-Jane Orr,	M.S.	Department of Agronomy, Plant and Environmental Sciences (Purdue University).	Main advisor: Ron Turco

Completed degrees (* denotes Von Sigler's advisee)

*Kanistha Chatterjee, M.S. 2011. Project title: *Development of a composite sampling method to assess airborne pathogen densities*.

*Kara Lindelof, M.S. 2011. Project title: *Contribution of Biosolid-Derived Bioaerosols to the Airborne Microbial Population*.

John Herman, Ph.D. 2009. Project title: *Understanding organic material degradation kinetics.*

*Malak Esseili, Ph.D. 2009. Project title: *Understanding* E. coli *population dynamics to improve bacterial source tracking.*

Erin Hammer, M.S. 2009. Project title: *Effects of garlic mustard (*Alliaria petiolata*) on soil nutrient dynamics and microbial community function and structure*.

*Issmat Kassem, Ph.D. 2009. Department of Environmental Sciences. *Typing and characterization of environmental* Staphylococcus aureus *communities.*

Qi Wang, Ph.D. 2007. Department of Environmental Engineering. *The effect of capping regime on the microbial communities and the biogas formation potential of contaminated surface sediments*. Main advisor: Cyndee Gruden.

*Xixi Huang, M.S. 2007. Department of Environmental Sciences. *Application of molecular fingerprinting to identify bacterial pollution source in Maumee Bay*.

Jona Scarbro, M.S., 2006. Department of Environmental Sciences. *Microbial transport through the vadose zone of a biosolids amended cropland: Implications for land application of Class B biosolids and surface water quality.* Main advisor: Daryl Dwyer.

Meghan Foley, M.S., 2006. Department of Environmental Engineering. *Toxicity of acetochlor to freshwater bacteria, and its persistence and potential for leaching in stream water (HYDRUS-1D).* Main advisor: Cyndee Gruden.

Kristen Devanna, M.S., 2006. Department of Environmental Sciences. *Role of* Dreissena *as ecosystem engineers: Effects to native bioturbators and benthic community structure and function.* Main advisor: Christine Mayer.

Swiss Federal Institute of Technology

Completed Doctoral degrees

Ciro Miniaci, Ph.D., 2007. Department of Soil Biology. *Microbial ecology of glacier forefield soils*.

Helmut Bürgmann, Ph.D., 2003. Department of Soil Biology. *Novel tools to characterize the activity and diversity of nitrogen fixing microorganisms in soil*.

Manuel Pesaro, Ph.D., 2003. Department of Soil Biology. *The impact of soil storage methods on microbial communities and pesticide degradation rates*.

Completed Diploma thesis

Sorana Crivii, Diplom., 2002. *Trends in succession of culturable bacteria along a glacier forefield.*