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### **Education**

- 1994 Ph.D. in Microbiology, Sofia University “St. Kliment Ohridski”, Bulgaria  
Major field: Physiology and Biochemistry of Microorganisms
- 1987 M.S. in Microbiology, Sofia University “St. Kliment Ohridski”, Bulgaria  
Major field: Applied and Environmental Microbiology
- 1985 B.S. in Molecular and Functional Biology, Sofia University “St. Kliment Ohridski”, Bulgaria

### **Appointments**

- 2002–present Research Assistant Soil Microbiologist, Dept. LAWR, University of California, Davis.
- 1999-2001 Postdoctoral Researcher, Dept. LAWR, University of California, Davis, CA.
- 1998-1999 Postdoctoral Research Associate of Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, IL.
- 1994-1998 Research Microbiologist, Head of Laboratory “Actinomycetes” National Bank for Industrial Microorganisms and Cell Cultures, Sofia, Bulgaria.
- 1993-1994 Research Microbiologist, Bulgarian Academy of Science, Institute of Molecular Biology.
- 1988–1993 Research Assistant, Department of Microbiology, Sofia University, Bulgaria.

### **Previous/ongoing projects**

Whole-genome sequencing of MTBE degrading strain (funded by DOE, UC campus- laboratory program); Development of Rapid, Miniaturized Sensors for Use in the Detection of Environmental Toxins (funded by NIEHS-Superfund and NSF); Reducing Selenium Loads and Ecotoxic Risk in IFDM Systems Using Solar Evaporator Basins that Combine Invertebrate Harvest with Algal Volatilization of Selenium (funded by DWR); Linking N Cycling to Microbial Community Function within soil microenvironments in cover crop systems (funded by Kearney Foundation of Soil Science); Microbial Observatories: Linking Microbial Community Structure and Function in Contaminated Aquifers (funded by NSF).

### **Synergistic Activities**

- *Manuscript Reviewer* for Applied and Environmental Microbiology, Biotechnology Progress, FEMS Microbiology Letters, Soil and Sediment Contamination, Letters Applied Microbiology, Biosensors and Bioelectronics
- *Proposals Reviewer* for University of California Discovery Program, Kearney Foundation of Soil Science, Gastro-Shields Students-grant Proposal Program, UCD.
- *Member of* Soil Sciences Graduate Group (LAWR, UCD) and Agricultural and Environmental Chemistry Graduate Group (Ag Chem, UCD), Biosensors Group
- *Member of* American Association for the Advancement of Science; American Society for Microbiology; International Society for Microbial Ecology; Bulgarian Society for Microbiology
- *Awards, Fellowships:* UC Davis Academic Federation Travel Award, 2006, 2004; Quebec Government Fellowship, University of Sherbrooke, Canada, 1997; UNESCO Fellowship, Budapest, Hungary, NCAIM, 1995; FEMS Laboratory Scholarship, Osnabruck, Germany, 1992; Federal Government Post-Graduate Scholarship Award, Moscow, Russia, 1991; Graduated with Great Distinction, Sofia University, Biological Faculty, Bulgaria, 1987.
- *Teaching:* Undergraduate course in Soil Microbiology, guest lecturer; Graduate course in Advanced Soil Microbiology, co-instructor, Seminar –New methods in Microbial Ecology, instructor.

**Fields of Interest:** Genomics, proteomics and genetics of MTBE degrading strain *M. petroleiphilum* PM1; Microbial Ecology of contaminated environments; Genomic and metagenomic approaches to study microbial communities; Biodegradation of organic pollutants; Se bioremediation; Biofuels; Nanobiotechnology and biosensors.

**Peer-reviewed publications:**

**K. R. Hristova**, R. Schmidt, A.Y. Chakicherla, T. C. Legler, J. Wu, P. S. Chain, K. M. Scow, and S. R. Kane. 2007. Comparative transcriptome analysis of *Methylibium petroleiphilum* PM1 exposed to the fuel-oxygenates Methyl-Tert-Butyl Ether and Ethanol. *Appl. Env. Microbiol*, 73: 7347-7357.

Kane, S. R.; Chakicherla, A. Y.; Chain, P. S. G.; Schmidt, R.; Shin, M. W.; Legler, T. C.; Scow, K. M.; Larimer, F. W.; Lucas, S. M.; Richardson, P. M.; and **K. R. Hristova**. 2007. Whole-Genome Analysis of Methyl tert-1 Butyl Ether (MTBE)-Degrading Beta-Proteobacterium *Methylibium petroleiphilum* PM1. *J. Bacteriology*, 189, (5), 1931-1945.

Cavagnaro, T., L. Jackson, K. Scow and **K.R. Hristova**. 2007. Effects of Arbuscular Mycorrhizas on Ammonia Oxidizing Bacteria in an Organic Farm Soil. *Microbial Ecology* 54:618-26.

Son, A., D. Dosev, M. Nichkova, Z. Ma, K. Scow, I. M. Kennedy, and **K.R. Hristova**. 2007. Quantitative DNA hybridization in solution using magnetic/luminescent core-shell nanoparticles. *Anal. Biochemistry* 370: 186-194.

Nakatsu, C., **K. Hristova**, S. Hanada, X-Y. Meng, J. R. Hanson, K. Scow, and Y. Kamagata. 2006. *Methylibium petroleiphilum* PM1 gen. nov., sp. nov., a new methyl tert-butyl ether (MTBE) degrading methylotroph belonging to the  $\beta$ -subclass of the Proteobacteria. *Int. J. Evol. Syst. Microbiol.* 45 (5):31-33.

Smith, A., **K. Hristova**, I. Wood, D. Mackay, E. Lory, and K.M. Scow. 2005. Comparison of biostimulation versus bioaugmentation with bacterial strain PM1 for treatment of groundwater contaminated with methyl tertiary butyl ether (MTBE). *Environ. Health Prospective* 113(3):317-332.

Feris, K.P., **K. Hristova**, B. Grebreyesus, D. Mackay, K. M. Scow. 2004. A shallow BTEX and MTBE contaminated aquifer supports a diverse microbial community. *Microbial Ecology* 48:589-600.

Okano, Y., **K.R. Hristova**, C. Leutenegger, L. Jackson, R. F. Denison, B. Gebreyesus, D. Lebauer, and K. M. Scow. 2004. Effects of Ammonium on the Population Size of Ammonia-Oxidizing Bacteria in soil: Application of Real-Time PCR. *Appl. Env. Microbiol*, 70, 2:1008-1016.

**Hristova, K.**, B. Gebreyesus, D. Mackay, and K.M. Scow. 2003. Naturally occurring bacteria similar to the methyl tert-Butyl Ether (MTBE)-degrading strain PM1 are present in MTBE-contaminated groundwater. *Appl. Environ. Microbiol.* 69(5):2616-2623.

Gandhi, D., **K. R. Hristova**, D. Mackay, and K. Scow. 2003. The Effect of Environmental Factors on MTBE Biodegradation. *In:* V.S. Magar and M.E. Kelley (Eds.) Remediation of Chlorinated and Recalcitrant Compounds. Battelle Press, Columbus, OH.

Davis-Hoover, W. J., S. A. Stavnes, J. J. Fleischman, S. C. Hunt, J. Goetz, M. Keper, **K. Hristova**, K. Scow, K. Knutson, W. Mahaffee and D.J. Slomczynski. 2003. BTEX, MTBE Bioremediation: Bionets Containing PM1, SOS or Air. E-25. *In:* V.S. Magar and M.E. Kelley (Eds.) Remediation of Chlorinated and Recalcitrant Compounds. Proceedings of the Seventh International In Situ and On-site Bioremediation Symposium. Battelle Press, Columbus, OH.

Stavnes S. A., J. Fleischman, J. Goetz, **K. Hristova**, S. Hunt, M. Kemper, K. Knutson, W. Mahaffee, M. Roulier, K. Scow, D. J. Slomczynski, and W. J. Davis-Hoover. 2002. MTBE Bioremediation with BioNets containing Isolite,

PM1, SOS or Air. *In* Wickramanayake, Godage B. & Robert E. Hinchee (Ed.) Remediation of Chlorinated and Recalcitrant Compounds. Battelle Press, Columbus, OH.

**Hristova, K. R.**, C.M. Lutenegger, and K. M. Scow. 2001. Detection and quantification of MTBE-Degrading strain PM1 by real-time TaqMan PCR. *Appl. Environ. Microbiol*, 67: 5154-5160.

**Hristova, K. R.**, Mau, M, Zheng, D., Aminov, R., Mackie, R., Raskin, L., and Gaskins, R., 2000. *Desulfotomaculum* genus- and group-specific small subunit rRNA hybridization probes for environmental studies. *Environ. Microbiol.* 2:143-160.

Deplancke, B, **Hristova, K.R.**, Oakley, H.A., McCracken, V.J., Aminov, R., Mackie, R.I., and H.R.Gaskins. 2000. Molecular ecological analysis of dissimilatory sulfidogen succession and diversity in the mouse gastrointestinal tract. *Appl. Environ. Microbiol.* 66(5): 2166-2174.

Balberg, M., **Hristova, K.R.**, Frigon, D., Mau, M., Zeringue, H., Brady, D., Beebe, D., and Raskin, L. 2000. Multy-Color Fluorescence Detection of Ribosomal RNA in Micro-Channels. In: *Proceedings of the International Society for Optical Engineering*, vol. 3912, pp.35-40.

Balberg, M., **K. Hristova**, D.J. Brady, D.Beebe, and L. Raskin, 2000. Optical Detection of Molecular Beacons in Microfluidic Devices, First International IEEE EMBS Special Topic Conference on Microtechnology in Medicine and Biology, October 12-14, 2000, Lyon, France.

**Hristova, K.**, Z. Sholeva, V. Chipeva, and M. Najdenova. 1997. Differentiation of *Streptomyces* strains by multilocus enzyme electrophoresis. *Biotechnology and Biotechnol. Equipment* 11:47-52.

**Hristova, K.**, V. Miteva, and I. Ivanova. 1997. Molecular identification of polyketide synthetase genes in *Streptomyces hygroscopicus* 155. *Compt. Rend. Acad. Bulg. Sci.*, 50:63-65.

**Hristova, K.**, and M. Najdenova. 1996. Isolation and taxonomic investigation of *Actinomyces* strains from Antarctica. In: *Bulgarian Antarctic Research*. Life Sciences. Pentsoft. pp. 26-29.

Chipeva, V., **K. Hristova**, N. Chipev, and P. Moncheva. 1996. Extracellular enzyme activity of *Streptomyces* strains isolated from soils on Livingston Island, Antarctica. In: *Bulgarian Antarctic Research*. Life Sciences. Pentsoft. pp 24-30.

**Hristova, K.**, Z. Sholeva, and V. Chipeva. 1996. Application of molecular biological methods in taxonomy of genus *Streptomyces*. *J. Culture Collections*, 1:3-10.

Moncheva, P., **K. Hristova**, Z. Sholeva, and I. Ivanova. 1995. The effect of Ca<sup>2+</sup> on *Streptomyces* sporulation. In: Beijerinck Centennial Microbial Physiology and Gene Regulation: Emerging Principles and Applications, Hague, The Netherlands, December 10-14, pp.185-187.

Ivanona, I., **K. Hristova**, P. Moncheva, and V. Miteva. 1995. Resistance of *Streptomyces hygroscopicus* 155 to nigericin, the antibiotic produced by it, and macromolecular synthesis in the strain. *Antibiotics and chemotherapy*, 40(4):12-16.

Moncheva, P., **K. Hristova**, and I. Ivanova. 1995. Resistance to the polyether ionophore antibiotic pandavir (nigericin) in two producing strains of *Streptomyces*. *J. Antibiotics*, 48(8):811-814.

Ivanova, I., **K. Hristova**, S. Danova, and P. Moncheva. 1994. Influence of Calcium ions on differentiation of *Actinomycetes*. *Antibiotics and chemotherapy*, 39(11):21-28.

Moncheva, P., A. Gancheva, **K. Hristova**, and I. Ivanova. 1992. Resistance of *Streptomyces hygrosopicus* 155 to autogenous and other antibiotics. *Antibiotics and chemotherapy*, 37(12):21-23.

Ivanova, I., **K. Hristova**, S. Tischkov, and P. Moncheva. 1992. Study of protoplasting influence on antibiotic activity and resistance in *Streptomyces hygrosopicus* 155. *Antibiotics and chemotherapy*, 37(11): 3-5.

**Hristova, K.**, V. Petkova, V. Danilenko, I. Ivanova, and B.V. Bakalov. 1992. Preparation and regeneration of protoplasts from *Streptomyces hygrosopicus* 155. *Antibiotics and chemotherapy* 37(12):21-23.

#### **Publications (in press/under review)**

Son, A., A. Dhirapong, D. Dosev, I. M. Kennedy, R. Weiss and **K.R. Hristova**. 2007. Rapid and quantitative DNA analysis of genetic mutations for polycystic kidney disease (PKD) using magnetic/luminescent nanoparticles. *Anal. Bioanal. Chem.*

R.E. Drenovsky, K.P. Feris, K.M. Batten, and **K. Hristova**. 2007. New and current microbiological tools for ecosystem ecologists: towards a goal of linking structure and function. *The American Midland Naturalist*. (accepted pending revisions)

Nozawa-Inoue, M., M. Jien, N. Hamilton, V. Stewart, K.M. Scow and **K.R. Hristova**. 2007. Quantitative Detection of Perchlorate-Reducing Bacteria by Real-Time PCR Targeting Perchlorate Reductase Gene. *Appl. Env. Microbiol.* (accepted pending minor revisions)

Schmidt, R.; V. Battaglia, K. Scow, S. Kane and **Hristova, K. R.** 2007. Establishment of a genetics system in the methyl *tert*-butyl ether degrading  $\beta$ -proteobacterium *Methylibium petroleiphilum* PM1. *Appl. Env. Microbiol.*

Feris, K., D. Mackay, N. de Sieyes, I. Chakraborty, Murray Einarson, **K.R. Hristova**, and Kate Scow. 2007. Mixed Linear Modeling Describes the Impact of Ethanol on Microbial Community Structure and Function During Natural Attenuation of Benzene, Toluene and o-Xylene in a Sulfate-Reducing Aquifer. *Env. Sci. Technol.*

#### **Patents (pending):**

**Hristova, K.**, Schmidt, R. Scow, K., Chakicherla, A., and S. Kane. **2007**. Discovery of the sequence and the function of genes involved in aerobic MTBE degradation. UC case: 2007-326.

**Hristova, K.**, Son, A., D. Dosev, M. Nichkova, I. M. Kennedy. **2007**. Quantitative nucleic acid hybridization using magnetic luminescent nanoparticles. UC case: 2006-698/699.

#### **Conference presentations (in the last three years)**

Bradford, J., R. Schmidt, and **K. Hristova**. 2007. Mitigating Selenium Ecotoxic Risk by Establishment of a Model Aquatic Ecosystem. Poster presentation at Water Resources Coordinating Conference, April 19<sup>th</sup>, Woodland, CA.

**Hristova, K.**, 2007. Microbiology of aerobic MTBE and TBA degradation. *Invited presentation* at the 17<sup>th</sup> Annual AEHS Meeting and West Coast Conference on Soils, Sediments, and Water, San Diego, CA, March 18-21.

**Hristova, K.**, 2006. Mitigating Selenium Ecotoxic Risk by Establishment of a Model Aquatic Ecosystem. 87<sup>th</sup> Annual Meeting of the AAAS Pacific Division, Univ. of San Diego, San Diego, CA, June 19-22.

**Hristova, K.**, 2006. Molecular Tools for Evaluating MTBE/TBA Biodegradation. Workshop Presentation: Evaluating Monitored Natural Attenuation of MTBE & TBA, 16<sup>th</sup> Annual AEHS Meeting and West Coast Conference on Soils, Sediments, and Water, March 16, 2006, Mission Valley, San Diego, CA.

Son, A. M. Nichkova, D. Dosev, I. M. Kennedy, and **K. Hristova**. 2006. Rapid and high throughput DNA analysis for MTBE degrading bacteria using luminescent lanthanide nanoparticles. Poster presentation at SBRP Superfund Annual Meeting, December 2006, San Diego, CA, USA

Son, A., M. Nichkova, D. Dosev, I. M. Kennedy, and **K. Hristova**. 2006. Luminescent lanthanide nanoparticle labels in DNA-based microarray approach for quantification of MTBE degrading bacteria. Poster presentation at Biosensors 2006, Toronto, Canada

**Hristova, K.**, A. Chakicherla, R. Schmidt, J. Wu, T. Legler, K. Scow and S. Kane. 2006. Comparative transcriptome analysis of *Methylibium petroleiphilum* PM1 exposed to the fuel-oxygenates methyl-tert-butyl ether and ethanol. Presentation to the Tenth International Society for Microbial Ecology Meeting, ISME-11, Vienna, Austria.

**Hristova, K.**, V. Battaglia, K. Feris, D. Mackay, and K. Scow. 2005. Diversity, population dynamics and biodegradation activity of subsurface microorganisms in a gasoline/MTBE contaminated aquifer under different redox conditions. ISSM/ISEB Joint International Symposia for Subsurface Microbiology. August 14-19, Jackson Hole, Wyoming.

K. Feris, K. Scow, D. Mackay, M. Einarson, L. Jacobsen, M. Knoske, L. Justice, and **K. R. Hristova** 2005. Impact of a controlled ethanol release on in situ biodegradation of BTX and MTBE and on population densities and community composition of Archaea and Bacteria. ISSM/ISEB Joint International Symposia for Subsurface Microbiology. August 14-19, Jackson Hole, Wyoming.

**Hristova, K.**, V. Battaglia, A. Chakicherla, J. Wu, S. Kane, P. Chain, and K. Scow. 2005. Biodegradation of contaminants associated with petroleum by *Methylibium petroleiphilum* PM1: Comparative genomic and physiological studies. Q-302. Abstract to the American Society of Microbiology General Meeting. Atlanta, GA., USA.

Kane, S., **K. Hristova**, P. Chain, A. Chakicherla, M. Shin, K. Scow, D. Barsky, P. Richardson, S. Lucas,. 2005. Whole genome analysis of MTBE-degrading beta-Proteobacterium *Methylibium petroleiphilum* strain PM1. N-191. Abstract to the American Society of Microbiology General Meeting. Atlanta, GA, USA.

M. Nozawa-Inoue, M. D. Danyluk, **K.R. Hristova**, L. J. Harris, K. M. Scow. 2005. Detection of *Salmonella enteritidis* in Almond Orchard Soil by Real-Time Quantitative PCR. Q-253. Abstract to the American Society of Microbiology General Meeting. Atlanta, GA, USA.

**K. Hristova**, V. Battaglia, K. Hicks, B. Inceoglu, D. Mackay and K. Scow. 2005. *Methylibium petroleiphilum* PM1, a new methyl tert-butyl ether (MTBE) degrading methylotroph present in California aquifers: Bioremediation Perspectives. **Invited presentation** at 2005 NGWA Conference on MTBE and Perchlorate, May 26-27. San Francisco, CA, USA.

**Hristova, K, R**, Feris, K, P, and Scow, K. 2005. Application of real-time PCR for enumeration of groundwater microorganisms during bioremediation. **Invited presentation** at ASLO Meeting, Salt Lake City, USA.

T. Cavagnaro, L. Jackson, K. Scow, and **K.R. Hristova**. 2005. Field studies of the population ecology of ammonia oxidizing bacteria. Presentation to the ASA-CSSA-SSSA International Annual Meetings, Nov. 6-10, 2005, Salt Lake City, UT.

**Hristova, K.**, A. Chakicherla, S. Kane, P. Chain, C. Nakatsu, and K. Scow. 2004. Metabolic diversity of *Methylobium petroleophilum* PM1, a MTBE degrading bacterium present in California aquifers. Presentation to the International Society for Microbial Ecology, ISME 04, Cancun, Mexico. **Received "Best Poster Award"**.