

Cynthia K. Bower

7055 NW Mountain View Dr
Corvallis, OR 97330

Ph: (541) 745-2539
e-mail: CKBower@cmug.com

DEGREES

- Ph.D. *Food Science and Technology*, Oregon State University, 1995
- B.S. *Medical Technology*, Oregon Health Sciences University, 1983
- B.S. *Zoology*, Oregon State University, 1979

EMPLOYMENT HISTORY

Research Assistant, Dept of Environmental and Molecular Toxicology
Oregon State University, Corvallis, OR, 2004-present
Philip Whanger, supervisor (phone: 541 737-1803)

Duties: Purification and analysis of selenium from biological samples using tandem column chromatography, perchloric acid digestion, titration protocols, and fluorometric analysis for selenium content. The purpose of this study is to determine and quantify the selenium-binding proteins so that selenium supplementation of foods can be improved.
[40hrs/wk; \$2,500/mo]

Assistant Professor (Senior Research), Dept of Food Science and Technology
Oregon State University, Corvallis, OR, 2002-2003
Mark Daeschel, supervisor (phone: 541 737-6519)

Duties: Research involving pathogenic microorganisms (Biological Safety Level 2) in a food safety environment, training students, ordering supplies, performing equipment maintenance, overseeing basic laboratory functions, and giving presentations to both national and university audiences
[40hrs/wk; \$52,000/yr]

Assistant Professor (Senior Research), Department of Bioresource Engineering,
Oregon State University, Corvallis, OR, 1999-2001
Joe McGuire, supervisor (phone: 541 737-6306)

Duties: Research involving antimicrobial proteins, training students, ordering supplies, performing equipment maintenance, overseeing basic laboratory functions, and giving presentations to both national and university audiences
[40hrs/wk; \$52,000/yr]

Post Doctoral Research Associate, Department of Bioresource Engineering,
Oregon State University, Corvallis, OR, 1995-97
Joe McGuire, supervisor (phone: 541 737-6306)

Duties: Research involving antimicrobial proteins, training students, ordering supplies, performing equipment maintenance, overseeing basic laboratory functions, and giving presentations to both national and university audiences
[40hrs/wk; \$36,000/yr]

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Graduate Research Assistant, Department of Food Science and Technology,
Oregon State University, Corvallis, OR, 1990-94
Mark Daeschel, supervisor (phone: 541 737-6519)
Duties: Research involving the antimicrobial protein nisin and its
efficacy against pathogenic bacteria on food-contact surfaces

Medical Technologist, Good Samaritan Hospital, Corvallis, OR, 1988-1989

Medical Technologist, Columbia Memorial Hospital, Astoria, OR, 1987-1988

Medical Technologist, Peace Corps Volunteer, Fiji Islands. 1985-1987

Medical Technologist, Western Lane Hospital, Florence, OR 1983-1985

Inland Fisheries, Peace Corps Volunteer, Senegal West Africa. 1979-1981

GRANTS AND CONTRACT SUPPORT

Protein antimicrobial barriers to bacterial adhesion
(J. McGuire and M.A. Daeschel, co-PIs)
Mallinckrodt Medical, Inc., 1997 \$13,667

Efficacy of nisin as a surface-active agent in pharmaceutical applications
(J.W. Ayres, M.A. Daeschel, J. McGuire and R.Y. Ofoli, co-PIs)
US Department of Agriculture, 1998-2001 \$169,400

Protein antimicrobial barriers to bacterial adhesion *in vivo*
(J. Parker, co-PI)
Oregon State University Research Council., 2000-2001 \$8,000

Improving Microbial Safety of Northwest Fresh and Processed Berries
(Yanyun Zhao, M.A. Daeschel, and John Henry Wells, co-PIs)
US Department of Agriculture, 2002-2005 \$325,000

PROFESSIONAL ACTIVITIES

Professional Societies

Institute of Food Technologists (IFT)

Professional Recognition

ASEV Scholarship, 1991/1992
Clorox Co. Graduate Student Scholarship, 91/92
Honor Society of Phi Kappa Phi, 1992
Gamma Sigma Delta Honor Society of Agriculture 1992
IFT Certificate of Merit, 1992/1993
Oregon Sports Lottery Scholarship, 93/94

PUBLICATIONS

Peer-Reviewed Publications

- Bower, C.K., J. McGuire, and M.A. Daeschel. 1995. Suppression of *Listeria monocytogenes* colonization following adsorption of nisin onto silica surfaces. *Appl. Environ. Microbiol.*, 61: 992-997.
- Bower, C.K., J. McGuire, and M.A. Daeschel. 1995. Influences on the antimicrobial activity of surface-adsorbed nisin. *J. Ind. Microbiol.*, 15: 227-233.
- Bower, C., J. McGuire, and M. Daeschel. 1996. The adhesion and detachment of bacteria and spores on food-contact surfaces. *Trends Food Sci. Technol.* 7:152-157.
- Bower, C.K., M.A. Daeschel, and J. McGuire. 1998. Protein antimicrobial barriers to microbial adhesion. *J. Dairy Sci.* 81(10): 2771-8.
- Bower, C.K., Q. Xu, and J. McGuire. 1998. Activity losses among T4 lysozyme variants after adsorption to silica nanoparticles. *Biotechnol. Bioeng.* 58: 658-662.
- Bower, C.K., S. Sananikone, M.K. Bothwell, and J. McGuire. 1999. Activity losses among T4 lysozyme charge variants after adsorption to colloidal silica. *Biotechnol. Bioeng.* 64: 373-376.
- Bower, C.K. and M.A. Daeschel. 1999. Resistance Responses of Microorganisms in Food Environments. *Int. J. Food Microbiol.* 50: 33-44.
- McGuire, J., C.K. Bower and M.K. Bothwell. (2000) On the molecular origins of protein structure and function at interfaces. *Australian J. Dairy Technol.*, 55: 65-70.
- McGuire, J., C.K. Bower and M.K. Bothwell. (2000) Protein films. In *Encyclopedia of Surface and Colloid Science*, A. Hubbard (ed.), Marcel Dekker, New York.
- Bower, C.K., M.K. Bothwell and J. McGuire. 2001. Lantibiotics as surface active agents for biomedical applications. *Colloids Surf. B: Biointerfaces.* 22: 259-265.
- Bower, C.K., J.E. Parker, A.Z. Higgins, M.E. Oest, J.T. Wilson, B. Valentine, M.K. Bothwell, and J. McGuire. 2002. Protein antimicrobial barriers to bacterial adhesion: in vitro and in vivo evaluation of nisin-treated implantable materials. *Colloids Surf. B: Biointerfaces.* 25: 81-90.
- Bower, CK., McGuire, J., M.K. Bothwell. 2003. Substrate Kinetics. In: *Encyclopedia of Agricultural, Food, and Biological Engineering*. Marcel Dekker, New York.
- Bower, C.K., K.F. Schilke, and M.A. Daeschel. 2003. Antimicrobial properties of raisins in beef jerky preservation. *J. Food Sci.* 68(4):1484-89.
- Bower, C.K., Stan, S., Daeschel, M. and Zhao, Y. 2003. Promoting the Safety of Northwest Fresh and Processed Berries. OSU Extension Publication.

Non-Refereed Publications

- Bower, CK, BT Watson, and MA Daeschel. 1992. Applications of Bacteriocins in controlling bacterial spoilage and malolactic fermentation of wine: interactions between the bacteriocin nisin and components of red wines. In: *Proceedings of the 3rd International Symposium: Innovations in Wine Technology*. May 25-27.

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Bower, C., M. Lakamraju, J. McGuire. And M. Daeschel. 1997. Nisin adsorption, exchange, and antimicrobial activity at interfaces. In: Advances in Food Engineering, G. Narsimhan, M.R. Okos, and S. Lombardo (eds), Purdue University, West Lafayette, pp 10-13.

Bower, C.K., J. McGuire. And M.A. Daeschel. 1999. Resistance responses of microorganisms in food environments. In: Proceedings of the 17th International Conference of the International Committee on Food Microbiology and Hygiene, Veldhoven, The Netherlands

COMMITTEES AND PROFESSIONAL SERVICE

Departmental (Bioresource Engineering / Dept. of Bioengineering)

- served as a member of the graduate committee (2000-2001)
- designed and maintained the newly formed Bioengineering webpages (2001)
- provided mentoring for Bioengineering students (1999-2001)

University Committees

- served as a member of the OSU Bicycle Advisory Committee
- designed and maintained the Bicycle Advisory Committee webpages (<http://osu.orst.edu/groups/bac/>)

Professional Service

Reviewer for Journals and Granting Agencies

- Langmuir
- Journal of Colloid and Interface Science
- Journal of Food Science
- Journal of Women and Minorities in Science and Engineering
- USDA (National Research Initiative Competitive Grants Program)

Panel member (CSREES NRI Competitive Grants Program) Post-Harvest, Washington D.C., May, 2001

Panel member (CSREES NRI Competitive Grants Program) Food Safety, Washington D.C., March, 2003

SPECIALIZED EXPERIENCE

- 1.) I have the ability to conceive, plan, and conduct research, as demonstrated by my awards of over \$500,000 in competitive grants. I have worked with proteins for over 10 years, and I am familiar with food lipids and their applications in the food industry.
- 2.) I have the ability to document research results, as evidenced by 14 publications in scientific journals. I also have experience delivering informative presentations (both orally and with posters) at national meetings and university workshops.