CURRICULUM VITAE

WILLIAM E. BENTLEY

Robert E. Fischell Distinguished Chair in Engineering
Fischell Department of Bioengineering, University of Maryland
Department of Chemical and Biomolecular Engineering, University of Maryland
Institute for Bioscience and Biotechnology Research
University of Maryland, College Park
College Park, MD USA 20742
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email: bentley@umd.edu

BIOGRAPHICAL:

Date of Birth: April 27, 1960
City of Birth: Syracuse, New York
Citizenship: USA

EDUCATION:

Ph.D.	Chemical Engineering, 1989, University of Colorado, Boulder, CO.
M.Eng.	Chemical Engineering, 1983, Cornell University, Ithaca, NY.
B.S.	Chemical Engineering, 1982, Cornell University, Ithaca, NY.

ACADEMIC APPOINTMENTS:

2016- **University of Maryland, College Park, Maryland**
Robert E. Fischell Distinguished Chair in Engineering
Inaugural Director, Robert E. Fischell Institute for Biomedical Devices

2006-2016 **University of Maryland, College Park, Maryland**
Founding Chair, Fischell Department of Bioengineering
Robert E. Fischell Distinguished Professor (2007-2016)
Professor, Institute for Bioscience and Biotechnology Research (2011-present)

2002-2006 **University of Maryland, Glenn L. Martin Institute of Technology, College Park, Maryland**
Director, Bioengineering Graduate Program, A. James Clark School of Engineering (2002-2006)
Herbert Rabin Distinguished Professor (2002- 2007)
Co-Director, Bioprocess Scaleup Facility (2002- 2006)

1994-2006 **University of Maryland, Glenn L. Martin Institute of Technology, College Park, Maryland**
Maryland Technology Enterprise Institute
Director, Bioprocess Scaleup Facility (Director, 1994-2002)

1989- **University of Maryland, College Park, Maryland**
Department of Chemical and Biomolecular Engineering
Affiliate Professor (2006-); Professor (1998 - 2006); Assoc. Professor (1994 - 1998);
Asst. Professor (1989-1994)

1989- **University of Maryland Biotechnology Institute, Baltimore, Maryland**
Center for Biosystems Research, College Park, Maryland
Professor (1998 - 2011); Assoc. Professor with tenure (1994 - 1998);
Asst. Professor (1989-1994)

EXPERIENCE OTHER THAN ACADEMIC APPOINTMENTS:

1994-2009 **Consulting**

Amgen, Inc., Thousand Oaks, CA, 1994
Pfizer, Co., Terre Haute, IN, 1994
Proteinix, Co., Rockville, MD, 1995
Amgen, Inc., Boulder, CO, 1996
Paragon Biotech, Inc., Baltimore, MD, 1997
Battelle, Research Triangle Park, NC, 1994-1997; 2000-
American Type Culture Collection, Rockville, MD, 1995-1999
Zone Therapeutics, Inc., Member, Scientific Advisory Board, 1999-2000
Brassica, Inc., Baltimore, MD, 1999 - 2001
Martek, Inc., Columbia, MD, 2000 - 2001
SAIC, Inc., McLean, VA, 2000 – 2003
Bristol Myers Squibb, Syracuse, NY, 2002 – 2003
Viventia, British Columbia, 2003 – 2004
Willkie-Farr, NYC, 2009
WilmerHale, NYC, 2013-14

1985-1989 **University of Colorado, Boulder, Colorado**
Department of Chemical Engineering, Research and Teaching Assistant

1983-1985 **International Paper Company, Tuxedo Park, New York**
Chemical and Energy Recovery, Corporate Research Center,
Research Engineer; Alternative Fuels Research and Recovery Process Improvement

1979-1982 **Olin Chemicals Corporation, Brandenburg, Kentucky**
Doe Run Plant, Production Engineer, Co-op Student, Ethylene Oxide Unit

RESEARCH INTERESTS:

Metabolic Engineering; Biofabrication; Synthetic Biology; Stochastic Modeling of Genetic Circuits; Quorum Sensing and Signaling; Insect Cell & Larvae / Baculovirus Protein Expression Systems; Cellular Stress Responses and *E. coli* Protein Expression, Bioreactor Design and Optimization

HONORS AND AWARDS:

Distinguished University Professor, University of Maryland, College Park, 2016
Awards Chair, Food, Pharmaceuticals & Bioengineering Division, American Institute of Chemical Engineers, 2016 -
Editor, Special Issue of *Current Opinion in Biotechnology* on *In vitro* and *In vivo* Pathway Engineering, Elsevier, 2015
Editor, Special Issue of *Biochemical Engineering Journal* on Biofabrication, 2014
Marvin Johnson Award, Division of Biochemical Technology, American Chemical Society (ACS), March, 2014
Charles Thom Award, Society of Industrial Microbiology and Biotechnology, 2013
Elected Fellow, American Chemical Society, 2013
Elected Member, Electorate Nominating Committee, American Association for the Advancement of Science, 2013.
Meeting Keynote, Upstream Processing, BIOT Division of American Chemical Society's 245th National Meeting, New Orleans, April, 2013
Division Award, Food, Pharmaceuticals & Bioengineering Division, AIChE, Pittsburgh, PA, 2012
Maryland Industrial Partnerships (MIPS), UMCP Faculty Impact Award, 25th Anniversary Gala, 2012.
University System of Maryland (USM) Regents' Faculty Award for Research/Scholarship/Creative Activity, 2011.
Elected Vice President, At-Large, American Institute for Medical and Biological Engineering, 2011-2013.
U.S. EPA, Scientific and Technological Achievement Award, Level II, 2010.
Member, Advisory Council, Dept. of Chemical and Biomolecular Engineering, Cornell University, 2008-2014.
Member, Departmental Advisory Committee, Department of Biomedical Engineering, Cornell University, 2009-present.
Member, International Scientific Advisory Board, Austrian Centre for Industrial Biotechnology (ACIB), 2009-2015
Editor, Special Issue of *Current Opinion in Biotechnology* on Tissue, Cell and Pathway Engineering, Elsevier, Ltd., 2008.
Elected Member, Managing Board, Society for Biological Engineers, 2008 -
Elected Fellow, American Academy of Microbiology, 2007
Director, American Institute of Chemical Engineers, FPB Division, 2006
Meeting Keynote, EFB Conference "Analysis of Microbial Cells at the Single Cell Level", Semmering, Austria, 2005.
Distinguished Lecturer, Department of Chemical and Environmental Engineering, UC Riverside, CA, 2005.
Division Lecturer, Food, Pharmaceuticals & Bioengineering Division, Area 15C, AIChE, San Francisco, CA, 2003.
Lindsay Lecturer, Department of Chemical Engineering, Texas A&M University, College Station, TX, 2003.

Miller Lecturer, Department of Chemical Engineering, Iowa State University, Ames, IA. 2003.
Outstanding Faculty Research Award, A. James Clark School of Engineering, UMCP, 2003.
Bronze Medallion, 23rd Army Science Conference, Orlando, FL, 2002.
Best Paper, Biotechnology Section, 23rd Army Science Conference, Orlando, FL, 2002.
Meeting Keynote, Society of General Microbiology (SGM), 150th Ordinary Meeting, University of Warwick, U.K., 2002.
Chair, Biochemical Technology (BIOT) Division, American Chemical Society, 2002 (Past-Chair, 2003; Chair-elect, 2001)
Meeting Keynote, EFB Conf. on Trends in Monitoring and Control of Life Science Applications, Lyngby, Denmark, 2002
Elected Fellow, American Association for the Advancement of Science, 2001.
Opponent (fakultets), Dr. A. Rozkov, Dept. of Biotechnology, Royal Institute of Technology, Stockholm, Sweden, 2001.
Elected Fellow, American Institute for Medical and Biological Engineering, 2001.
Opponent (fakultets), Dr. Mats Akesson, Dept. of Automatic Control, Lund Institute of Technology, Lund, Sweden, 1999
Allan C. Davis Medal, State of Maryland's Outstanding Young Engineer, Maryland Science Center, 1998
Outstanding Teacher Award, Celebrating Teachers Program, University of Maryland, 1998
Visiting Professor, Universiti Teknologi Malaysia, Dept. of Bioprocess Engineering, Johor Bahru, Malaysia, 1997
Outstanding Faculty Award, University of Maryland College Park, College Park Association of Parents (CPAP), 1997
Finalist (5 total), Outstanding Advisor Award, University of Maryland College Park, given by CPAP, 1997
Schering-Plough Young Investigator Award, Society of Industrial Microbiology, 1996.
Outstanding Achievement in Engineering Sciences Award, Washington Academy of Sciences, 1996
Honorary Fellow, Washington Academy of Sciences, 1996.
Dow Outstanding New Faculty Award, American Society for Engineering Education, ASEE, 1995.
Research Initiation Award, National Science Foundation, 1990
Research and Creative Work Award, University of Colorado, 1989
Robert York Fellowship Award, Cornell University, 1983

PROFESSIONAL AFFILIATIONS, SERVICE, AND INVITED LECTURES:

Affiliations

Society for Biological Engineers (SBE)
Biomedical Engineering Society (BMES)
American Society of Microbiology (ASM)
New York Academy of Sciences (NYAS)
American Institute of Chemical Engineers (AIChE)
American Chemical Society (ACS)
Society for Industrial Microbiology (SIM)
American Association for the Advancement of Science (AAAS)
American Society for Engineering Education (ASEE)
American Institute for Medical and Biological Engineering (AIMBE)

Service

Faculty Reviewer, School of Biotechnology, KTH Royal Institute of Technology, Stockholm, Sweden, October, 2015.
Faculty Reviewer, School of Chemical Science and Engineering, KTH Royal Institute of Technology, Stockholm, Sweden, October, 2015.
Member, Scientific Advisory Board, Synthetic Biology for Clinical & Translational Innovation (SynCTI) Center, National University of Singapore, October, 2105 – present
Session Chair, Session VI, Engineering at the Micro- and Nanoscale, Biochemical and Molecular Engineering XIX, Puerto Vallarta, Mexico, July, 2015 (w/ L. Palomares & C. Yung).
Member, NSF, Graduate Research Fellowship Panel, Bioengineering, Web-based sessions, January, 2015.
Session Moderator, 4th AIMBE/NIH Workshop on Validation and Qualification of New In Vitro Tools and Models for the Pre-Clinical Drug Discovery Process, Bethesda, MD, March, 2014.
Member, NSF, MCB/SSB Systems and Synthetic Biology Panel, Ballston, VA, February, 2014
Member, DOE Reverse Site Review Panel, Lawrence Berkeley National Laboratory Radiochemistry and Imaging Instrumentation Science Focus Area, 2013.
Member, BMES Subcommittee redefining ABET Bioengineering-specific Outcomes Criteria, 2013
Member, NSF, CBET/MCB Networks and Regulation CAREER Panel, Ballston, VA, October, 2012
Member, AIMBE Board Committee overseeing NIH/AIMBE Summit on Validation and Qualification of New in vitro Tools for the Pre-Clinical Drug Discovery Process, 2011-2013
Member, Search Committee for Exec. Director of American Institute for Medical and Biological Engineering, 2012
Invited Member, NSF CyberPhysical Systems Workshop on Biomedical Devices, Ballston, VA, July, 2012

Member, NIH, NIAID Quorum Sensing P01 Peer Review Panel, Jan. 2012
Invited Member, Editorial Committee, Annual Review of Biomedical Engineering, Baltimore, 2011
Member, NIH, NIBIB Peer Review Panel on Team-Based Design, Bethesda, Nov., 2011.
Member, NSF CBET Scientific Review Panel, May, 2010.
Program Chair, Southeast Biomedical Engineering Conference, College Park, MD, May, 2010
Associate Editor of Reviews, *Biotechnology and Bioengineering*, J. Wiley & Sons, 2009 –
Member, Advisory Board, *Biofabrication*, IOP (Institute of Physics) Journals, 2009 – 2014
Program Sub Chair, Biochemical Technology (BIOT) Division, American Chemical Society, 2008 meeting.
Member, NIH, RNAi Study Section, NICDR, March, 2008.
Member, NSF, CBET Division Panel, May, 2007; Dec. 2007
Member, NIH, Computational Modeling and Analysis of Biological Systems Study Section, Bethesda, MD, Feb. 2007.
Member, NSF, Nanotechnology Exploratory Research Panel, Feb, 2007
Member, Meeting Advisory Board, Biochemical Engineering XV, Engineering Conferences International, Quebec City, Canada, 2007
Member, Scientific Advisory Board, European Federation of Biotechnology, 4th Recombinant Protein Production Meeting: a Comparative View on Host Physiology, Barcelona, Spain, 2006.
Member, NIH, NCI, National Nanotechnology Cancer Center Study Section, Bethesda, MD, 2005
Editorial Board, *Enzyme and Microbial Technology*, Elsevier, 2005 –
Meeting Co-Organizer, *Biochemical Engineering XIV*, Engineering Conferences International, Harrison Hot Springs, British Columbia, Canada, July, 2005.
Member, NIH, Study Section on ZRG1 MOSS D14 Muscle R01 and Small Business, 2005
Member, NSF Multiscale Modeling Panel, 2005.
Member, DOE, Genomes to Life Panel, 2005-2006.
Member, Formation Committee, Society for Biological Engineering, 2004.
Member, NSF, CAREER Award Panel, Biochemical Engineering and Biotechnology Programs, 2004.
Member, Genomic and Proteomics SBIR Panel, National Science Foundation, 2004.
Member, NIH, Computational Modeling and Analysis of Biological Systems Study Section, Washington, DC., June 2004.
Member, Office of Science, Department of Energy, Genomes to Life (GTL) Panel, 2003.
Member, NSF, CAREER Award Panel, Biochemical Engineering and Biotechnology Programs, 2003.
Member, External Review Committee, Department of Chemical Engineering, University of Connecticut, Storrs, CT, 2003.
Editorial Board, *Biotechnology and Bioengineering*, J. Wiley & Sons, 2003 -
Chair, Biochemical Technology (BIOT) Division, American Chemical Society, 2002 (Past-Chair, 2003; Chair-elect, 2001)
Member, Metabolic Engineering Panel, National Science Foundation in collaboration with NIH, EPA, USDA, NIST, FDA, DOE, May, 2002.
Member, NIH, Infectious Diseases & Microbiology Study Section, Center for Scientific Review, March, 2002.
Subject Advisor, *BMC Biotechnology*, BioMed Central, Ltd., 2001-
Editorial Board, *Microbial Cell Factories*, BioMed Central, Ltd., 2001-2014
Editorial Board, *Biotechnology Letters*, Kluwer Academic Publishers, London, UK, 2000-2005
Member, CAREER Award Panel, Biochemical Engineering and Biotechnology Programs, Engineering Directorate, National Science Foundation, 2001.
Member, Large Grants Panel, Biochemical Engineering and Biotechnology Programs, Engineering Directorate, National Science Foundation, 2001.
Chair-Elect, Biochemical Technology (BIOT) Division, American Chemical Society, 2001.
Program Chair, Biochemical Technology (BIOT) Division, 219th ACS National Meeting, Anaheim, CA, Spring, 1999
Member, Awards Committee, ACS BIOT Division, 1999 - 2005.
Chair, Advisory Committee on Fate and Persistence of Pathogens, Water Environment Research Foundation, Alexandria, VA, 1999 – 2001.
Member, Search Committee, Senior Executive Service Biochemical Engineer Position, U.S. Army Materiel Command, Alexandria, VA, December, 1998.
Member, CAREER Award Panel, Biochemical Engineering and Biotechnology Programs, Engineering Directorate, National Science Foundation, October, 1997.
Member, Biomolecular Science and Engineering Panel, National Accelerated Bioremediation Research Program, Department of Energy, Gaithersburg, MD, May, 1997.
Member, Academic Advisory Committee, Department of Chemical Engineering, University of Colorado, Boulder, CO (1997 - 2000).
Member, Advisory Board, CHEMTECH, Published by the American Chemical Society (1993-1997).
Biology and Bioengineering Member, JTEC site review panel of Exploratory Research for Advanced Technology (ERATO) Program, Tokyo, Osaka, Kyoto, Japan, September, 1995.
Member, Executive Committee, Biochemical Technology Division, American Chemical Society (1993 - present).

Session Chair, Biochemical Technology Division, Symposium on Molecular Approaches for Enhance Protein Expression, 213th American Chemical Society Spring National Meeting, New Orleans, LA, March 1996 (with Dr. M. L. Peterson).

Member, NSF Small Business Innovation Research (SBIR) Panel, Division of Environmental Biology, National Science Foundation, Arlington, VA, September, 1995.

Member, Committee on Student Travel Awards, BIOT Division, American Chemical Society (1995 - 2001).

Member, Program Committee, Society for Industrial Microbiology, Maryland/Washington Local Section (1991-1994).

Member, NSF Small Business Innovation Research Panel, Division of Environmental Biology, National Science Foundation, Arlington, VA, September, 1994.

Session Chair, Biochemical Technology Division Poster Session, 211th American Chemical Society Spring National Meeting, Anaheim, CA, March 1995.

Session Chair, Symposium on Prokaryotic Expression Systems: Novel Techniques and Applications, 207th ACS Spring National Meeting, Denver, CO, March 1993 (with Dr. Scott Winston).

Session Co-Chair, Symposium on Advances in Fermentation Processes, AIChE Annual Meeting, St. Louis, MO, November 1993 (with Dr. Govind Rao).

Meeting and Program Chair, Mid-Atlantic Biochemical Engineering Symposium (MABEC), at Adult Education Center, University of Maryland, College Park, MD, March 1991 (10 universities represented and 80 participants).

Session Co-Chair, Symposium on Metabolic Engineering, 200th ACS National Meeting, Washington, DC, August 1990 (with Dr. Lee Lynd)

Ad hoc Reviewer for National Science Foundation, National Institutes of Health, Austrian Biotechnology Center, Portuguese Foundation for Science and Technology, Korean Science and Engineering Foundation, FWF Fonds zur Forderung der Wissenschaftlichen Forschung (Austria), Maryland Agricultural Experiment Station, International Foundation for Science, *Nature, Nature Nanotechnology, Nature Biotechnology, Nature Chemical Biology*, *Cell Research*, *Molecular Systems Biology*, *ACS Chemical Biology, ACS Synthetic Biology, Annals of the New York Academy of Sciences*, *Applied Artificial Intelligence, Analytical Chemistry*, *Applied Biochemistry and Biotechnology, Applied and Environmental Microbiology, Canadian Journal of Chemical Engineering*, *Marine Technology Society Journal, Biotechniques, Bio/Technology*, *The Biochemical Engineering Journal*, *Journal of Air & Waste Management Assoc*., *Journal of Cell Research, Journal of Virology, Langmuir, Molecular Biosystems, Journal of Bacteriology, Enzyme and Microbial Technology*, *Biotechnology and Bioengineering*, *Biotechnology Letters*, *Applied Microbiology and Biotechnology, PLoS Computational Biology, PLoS ONE, Bioinformatics, Molecular Microbiology*, *Metabolic Engineering*, *Proceedings of the National Academy of Sciences, Biotechnology Progress, Journal of Environmental Engineering*, *Environmental Science and Technology*, *Journal of Process Control, Sensors,* and Advanced Technologies Program of the National Institute for Standards and Technology.

Workshop on Fermentation (two days each) twice per year. Co-sponsored by New Brunswick Scientific, Inc. and accredited for continuing education by the American Society for Microbiology (with Drs. G. Rao and G. Payne, MBI/UMBC, 1993-1995).

Workshop on Fermentation Microbiology (once per year). Four day workshop originally sponsored by American Type Culture Collection (ATCC), Rockville, MD, 1995 - present (w/Drs. Payne (UMBC/CAB), Marten (UMBC) and B. Woodard (UMCP)).

Member, Biomass Conversion Technology Panel, Agency for International Development, Office of the Science Advisor, National Academy of Sciences, Washington, DC, (annually, 1989-1994).

Attendee, American Society of Engineering Education, Chemical Engineering Young Faculty Summer School, Montana State University, Bozeman, MT, August 7-13, 1992.

Invited Lectures

"Host/Vector Interactions: An Engineers Perspective", Center for Agricultural Biotechnology, Maryland Biotechnology Institute, College Park, MD, October, 1989.

"Maximizing Heterologous Protein Expression from Recombinant *E. coli*", Department of Chemical Engineering, University of Maryland, College Park, MD, October, 1989.

"Heterologous Protein Expression: Effects on Metabolism and Stability",
Martek Corporation, Columbia, MD, October, 1989.
Crop Genetics International, Hanover, MD, December, 1989.

"Analysis of Host-Cell Response to Cloned-Protein Induction: Strategies to Increase Cellular Productivity", Department of Chemical and Biochemical Engineering, UMBC, Baltimore, MD, May, 1992.

"Stability in Recombinant Bacterial Fermentations: Simple Solutions for Maintaining Process Longevity", Society for Industrial Microbiology, American Type Culture Collection, Rockville, MD, June, 1992.

"Optimization of Heterologous Protein Expression Systems: *E. coli* and Sf-9", Center of Marine Biotechnology, Maryland Biotechnology Institute, Baltimore, MD, October, 1992.

"Increasing Cellular Productivity by Understanding Defense Mechanisms and Stress Responses", Thayer School of Engineering, Dartmouth College, Hanover, NH, April, 1993.

"Towards Optimal Expression in *E. coli* via Global Metabolic Regulation", Pfizer, Inc., Terre Haute, IN, January, 1994.

"Increasing Productivity Through Consideration of Cellular Metabolism: The Case of *E. coli* Stress Responses", Amgen Inc., Thousand Oaks, CA, March, 1994.

"*E. coli* and Sf-9/Baculovirus Expression Systems: Towards a Cellular Understanding of Heterologous Protein Yield," Proteinix Co., Proneuron Co., and IGEN Inc., Rockville, MD, June, 1994.

"Optimal Bioreactor Configuration for Microbial Degradation of Thiodiglycol: the Primary Hydrolysis Product of Sulfur Mustard", Center of Marine Biotechnology, UMBI, Baltimore, MD, October, 1994.

"Impact of Bioreactor Operating Strategy on Waste Remediation", Center for Bioremediation and Biomass Conversion, University of Maryland Eastern Shore, Princess Ann, MD, October, 1994.

"Cellular Metabolism and Protein Yield in Different Host Cells", Center for Advanced Research in Biotechnology (CARB), University of Maryland Biotechnology Institute, Shady Grove, MD, October, 1994.

"Biological Reactors for Waste Degradation", Suburban Maryland Technology Council, National Institute of Standards and Technology, Gaithersburg, MD, January, 1995.

"Protease Activities and Cell Stress in *E. coli*: Characterization, Manipulation, and Utility",
Amgen Corporation, Boulder, CO, January 1996.
Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA, April, 1996.

"Towards Recombinant Subunit Vaccines - Expression Characteristics in Baculovirus / Insect Cell Systems", Department of Chemical Engineering, University of Colorado, Boulder, CO, January, 1996.

"Characterization of Protease Activity in Insect Cells after Infection with Baculovirus", MedImmune, Inc., Gaithersburg, MD, April, 1996.

"Insects, Vehicles for Expression of Heterologous Genes", Dept. Chemical and Biochemical Engineering, University of Maryland, Baltimore County, Baltimore, MD, April, 1997.

"Green Fluorescent Protein in the Insect Cell / Baculovirus Expression System", SmithKline Beecham, King of Prussia, PA, December, 1997.

"Towards Edible Vaccines: Protein Expression in Insects", Department of Chemistry and Biochemistry, University of Maryland, College Park, April, 1998.

“Advancements in *E. coli* Protein Expression: Use of Novel Fusion Constructs”, Bioscience Contract Production Corporation, Baltimore, MD, April, 1999.

“Making Proteins and Vaccines in Bugs”, Dept. of Chemical Engineering, Johns Hopkins University, Baltimore, MD, April, 1999.

“Application of Differential Display and Antisense for Evaluation and Control of Transient Gene Expression when Overexpressing Recombinant Proteins in *E. coli*”, invited presentation in session #26, entitled “Using genomics for the improvement of cellular expression systems and bioprocesses”, Society for Industrial Microbiology, 50th Anniversary Annual Meeting, Arlington, VA, August, 1999.

“A Functional Genomics and Bioinformatics Approach for Enhancing Recombinant Protein Expression in *E. coli*”, Distinguished Lecture Series in Nanomaterials and Biomaterials, Department of Materials and Nuclear Engineering, UMCP, October, 1999.

“Enhancing Gene Expression via Functional Genomics”, National Institutes of Health, Bethesda, MD, October, 1999.

“A Functional Genomics Approach for Enhancing Gene Expression in *E. coli*”, Dept. of Chemical Engineering, University of Colorado, Boulder, CO, January, 2000.

“High Cell Density Recombinant Escherichia coli Fermentation: Improving Yield by Examining Global Gene Regulation”, invited presentation session #23, entitled, “High Cell Density Fermentations and Biological Products”, Society for Industrial Microbiology, San Diego, CA, July, 2000.

“Harnessing the Quorum Circuit for Improved Yield in Recombinant High Cell Density Cultures of *E. coli*”, invited presentation session #28, entitled, “Genetic and Engineering Approaches to Fermentation Optimization”, Society for Industrial Microbiology, San Diego, CA, July, 2000.

“Genomic Analysis of Heterologous Protein-Induced Stress Response in *E. coli*”, Keynote Lecture, “Recombinant Protein Production in Prokaryotic and Eukaryotic Cells: A Comparative View on Host Physiology” meeting, sponsored by the European Federation of Biotechnology, Semmering, Austria, October, 2000.

“Does Cell-to-Cell Communication (Quorum Sensing) Play a Role in *E. coli* Fermentations?”, Department of Chemical Engineering, University of Wisconsin, Madison, WI, February, 2001.

“Quorum Sensing and Communication - A New Target for Metabolic Engineering”, Center for Advanced Research in Biotechnology, Gaithersburg, MD, June, 2001.

“Identifying Bottlenecks *in vivo* and in processes via molecular biosciences: *E. coli* and insect cell/baculovirus model systems”, Merck Research Laboratories, Merck & Co., Inc., West Point, PA, June, 2001.

“Multicellularity Among *E. coli*: Can We Harness this to Improve Fermentations?", Department of Chemical Engineering, University of Connecticut, Storrs, CT, September, 2001.

“Production of Proteins in *Trichoplusia ni* Larvae: Process identification and in vivo Manipulation”, International Symposium on Prospects for the Development of Insect Factories, Institute of Insect and Animal Sciences, NIAS, Tsukuba, Japan, October, 2001.

“Elucidation of Quorum Behavior: A New Target for Metabolic Engineering”, Bioinformatics and Genomics 2: Focus

on Metabolic Engineering, Annual Meeting American Institute of Chemical Engineers, Reno, NV, November, 2001.

"Bioengineering – Bridging a Link to Toxicology", Annual Meeting of the Society of Toxicology, Nashville, TN, March, 2002.

"*In vivo* Manipulation of Metabolic Activity for Improving Expression Systems: Quorum Behavior and RNAi", Department of Chemical Engineering, Rutgers University, February, 2002.

"Towards Real Time Metabolic Engineering using Tapered Optical Fiber RNA Sensors", Department of Energy Workshop on Imaging Gene Expression *in vivo*, Boston, MA, February, 2002.

"Genomic Analysis of High Cell Density Recombinant Escherichia coli Fermentations: Affected Regulons and Quorum Circuitry", Fermentation Studies: Post Genomic Era, SGM 150th Ordinary Meeting, University of Warwick, United Kingdom, April, 2002.

"Transcriptional analysis of *E. coli* fermentations leads to process yield improvements and discovery of multicellularity" Keynote Lecture, International Conference on Trends in Monitoring and Control of Life Science Applications, Organized by Section on Biochemical Engineering Science, European Federation of Biotechnology, Lyngby, Denmark, October, 2002.

"*E. coli* gene regulation via quorum autoinducer AI-2 - metabolism and signaling", VA-MD Regional College of Veterinary Medicine, College Park, MD, September, 2002.

"Interfering RNA (RNAi) for Metabolic Engineering of Eukaryotes"
Department of Chemical Engineering, University of Delaware, Newark, DE, October, 2002.
Department of Chemical Engineering, University of Colorado, Boulder, CO, December, 2002.

"Transcriptional Analysis of *E. coli* Fermentations leads to Process Yield Improvements and Discovery of Multicellularity, Bristol Myers Squibb Company, Syracuse, NY, October, 2002."Metabolic Engineering of Bacterial Autoinduction: Looking outside the cell for insight on its metabolic regulation", Department of Materials Science and Chemical Engineering, University of Minnesota, Minneapolis, MN, April, 1, 2003.

"Transient Nucleic Acid Controllers in Metabolic Engineering", Department of Chemical Engineering, University of Texas, Austin, TX, April 15, 2003.

"Confluence of Nano-Info-BioTechnology", Charles and Helen White Symposium, A. James Clark School of Engineering, UMCP, May, 2003.

"Bacterial Autoinduction: Looking outside the cell for insight on gene expression", Biochemical Engineering XIII, Boulder, CO, July, 2003.

"Manipulation of metabolic landscape for biomolecular synthesis: understanding and controlling bacterial cell-to-cell signaling"
the Lindsay Lecture, Department of Chemical Engineering, Texas A&M University, College Station, TX, Oct., 2003.
the Miller Lecture, Department of Chemical Engineering, Iowa State University, Ames, IA, Sept. 2003.

"Regulon Engineering for Enhanced Protein Synthesis",
Division Lecturer, Plenary Session of Food, Pharmaceuticals & Biotechnology Division, American Institute of Chemical Engineers, San Francisco, CA, Nov. 2003.
Helotes Foundation, Center of Excellence in Biotechnology, Bioprocessing, Education and Research, University of Texas, San Antonio, TX, Sept. 2004.

"Potentiating the Language of Bacteria", in invited session on "The Role of Chemical Engineers in Bioinformatics and Systems Biology World", AIChE Annual Meeting, Austin, Texas, Nov. 2004.

"Interfering with Bacterial Crosstalk in Bioprocesses",
Department of Chemical Engineering, Drexel University, Dec. 2004.
Distinguished Seminar Series Speaker, Dept. Chem. & Environ. Eng., University of California, Riverside, Jan., 2005.

"Wiring and Rewiring the Circuits of Quorum Sensing", Meeting Keynote - European Federation on Biotechnology Meeting on "Analysis of Microbial Cells at the Single Cell Level", Semmering, Austria, May, 2005.

"Nanobiotechnology@Maryland", one of three keynotes Greater Baltimore Committee, GBC GBC / USM Nano-Bio Symposium: Nano and Biotechnology; A Winning Combination, A New Growth Industry, Dec., 2005.

"Engineering the Interface: Embedding "Bio" into Devices", Invited presentation in "Systemic Innovation for Microbial Biotechnology: the 2006 Annual Meeting and International Symposium", The Korean Society for Microbiology and Biotechnology, Busan, S. Korea, June, 2006.

"Bacterial Quorum Sensing: A Target for Systems Bioengineering Research", Meeting Keynote at 11th Biochemical Engineering Conference, Taipei, Taiwan, June, 2006.

"Micromanipulators for Cellular Engineering", Taipei University of Science and Technology, Taipei, Taiwan, June, 2006.

"Bacterial Quorum Sensing: A Target for Systems Bioengineering Research", Department of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA, December, 2006.

"Bioengineering – Maryland's Next Great Enterprise", Meeting Keynote at Asia Leadership Forum, Sharing Resources in a Safer World, Taipei, Taiwan, October, 2006.

"Bacterial Quorum Sensing: A Target for Systems Bioengineering Research"
Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY, February, 2007.
Department of Biomedical and Chemical Engineering, Syracuse University, Syracuse, NY, February, 2007.

Department of Chemical Engineering, University of Massachusetts, Amherst, MA, April, 2007.
BioIT Coalition Conference, Medical Advances through Bioengineering and Medical Knowledge Discovery through Information Visualization, College Park, MD, May, 2007.

"Biofunctionalization of Prepackaged Microfabricated Devices: Spatio-temporal-controlled assembly of biochemical pathways", invited presentation in session "High Throughput and Omics Technologies", Biochemical Engineering XV, Quebec City, CA, July, 2007

"Interrogating Bacterial Communication Networks – Issues and Applications"
Department of Chemical Engineering, Pennsylvania State University, State College, PA, February, 2008.
Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Troy, NY, October, 2008.
Department of Biology, Catholic University, Washington, DC, November, 2008.

"RNA Interference to Enhance Cell Performance", invited presentation at Cambridge Health Institute's 3rd Annual Baculovirus Technology Meeting, Boston, MA, September, 2008.

"Cell-cell Signaling and Communication: An Avenue for New Drugs, Devices, and Expression Systems", invited presentation at 5th Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries – EMCC5, Cetraro, Italy, May, 2008.

"At the Interface of Biology and Engineering" Georgetown University, Washington, DC, January, 2009.

"Bacterial Talk: Components, Analysis, and Applications"
Department of Bioengineering, Rice University, Houston, TX, March, 2009.

"Making Sense of Quorum Sensing: Basic Modalities and Rewired Utilities"
Keynote presentation at Foundations of Systems Biology and Engineering meeting (FOSBE 2009), Denver, CO, Aug. 2009.
Center for Bio/Molecular Science and Engineering, Naval Research Laboratory, Washington, DC, September, 2009.
NIGR Center for Chemical Genomics, Rockville, MD, October, 2009

"Hierarchical Manipulation of Phenotype by Regulon Engineering: Spatially Arranged Nanofactories that Direct Population Behavior", invited presentation at Biochemical Engineering XVI: Past, Present, and Future of Biochemical Engineering meeting, Burlington, VT, July, 2009.

"Conceptual Underpinnings of Quantitative Systems Biology: A Bottom-up Approach", special symposium in honor of Fred G. Heineken, 239th National Meeting, American Chemical Society, San Francisco, CA, March, 2010.

"Biofabrication for Interrogating and Modulating Biological Signaling"
Department of Chemical and Biomolecular Engineering, University of Illinois, Urbana, IL, February, 2010.
Department of Chemical and Biological Engineering, Northwestern University, Evanston, IL, April, 2010.
Department of Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, Sept. 2010.

"Biofabrication for Interrogating and Modulating Biological Signaling: Honing in on Quorum Sensing"
Department of Chemical Engineering, Princeton University, Princeton, NJ, March, 2011.
Department of Chemical and Biomolecular Engineering, University of Delaware, September, 2011.
Department of Bioengineering, Rice University, December, 2011.

"Interrogation of Biological Signaling via Biofabricated Devices", invited presentation at Biochemical and Molecular Engineering XVII, Seattle, Washington, June, 2011.

"Rewiring Quorum Sensing Signaling Yields Autonomous Localization and Actuation of Engineered Cells"
Invited presentation for Engineering Signaling Pathways symposium at the Society for Industrial Microbiology Annual Meeting, New Orleans, LA, July, 2011.

"Biofabrication & Synthetic Biology – New Technologies for Solving Future Problems" invited presentation at the Army War College, National Defense University, Washington, DC, January, 2012.

"Center of Excellence in Regulatory Science and Innovation"
Institute of Medicine (IOM), IOM's Forum on Drug Discovery, Development, and Translation, Washington DC, March, 2012.
FDA Science Board, US Food and Drug Administration, Silver Spring, MD, January, 2012.

"Translating Academic Research into Companies - Chesapeake PERL Reflections", Keynote presentation at Biopharmaceutical Process and Quality Consortium, University of Massachusetts, Lowell, March, 2012.

"Biofabrication for Evaluating Constructs of Synthetic Biology" invited presentation at the Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries 7 (EMCC-7), Corfu, Greece, April, 2012.

"The Tools of Synthetic Biology & Biofabrication for Guiding Bacterial Cell Behavior"
Invited Keynote, enGENEious Conference, University of Oxford, UK, June, 2012

"Body On-A-Chip Systems"
2nd AIMBE Workshop on Validation and Qualification of New In Vitro Tools and Models for the Pre-Clinical Drug Discovery Process, Bethesda, MD, September, 2012.

"Developing the Biotechnological Toolbox: Biofabrication at the Intersection of Synthetic Biology and Microelectronics", FPBD Division Award Lecture, AIChE Annual Meeting, Pittsburgh, PA, October, 2012.
Department of Chemical and Biological Engineering, University of Wisconsin, October, 2012.

"A Systems Biotechnological Interrogation of Quorum Sensing: Opportunities for Altering the Microbiome", Keynote

presentation at the Bioscience Research & Technology Review Day, University of Maryland, November, 2012.

"Rewiring Signal Transduction to Guide Multicellularity", Keynote presentation for Upstream Processes Symposia (BIOT Division) at the 245th National Meeting of the American Chemical Society, New Orleans, April, 2013.

"Developing the Biotechnological Toolbox: Biofabrication at the Intersection of Synthetic Biology and Microelectronics"
Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, April, 2013
Center for Nanotechnology and Molecular Engineering and Sciences Institute, University of Washington, Seattle, WA, April, 2013.
Department of Chemical Engineering, Ira Fulton Schools of Engineering, Arizona State University, October, 2013

"Biofabrication: An Assembly Paradigm for Device Construction that Facilitates Communication", Agilent Technologies, Inc., World Headquarters, Santa Clara, CA, May, 2013

"A Systems Biotechnological Interrogation of Quorum Sensing: Opportunities for Altering the Microbiome", Charles Thom Award Address, Society of Industrial Microbiology and Biotechnology, San Diego, CA, August, 2013

"Biomaterials Standards: Challenges & Opportunities", keynote invited speaker, 2013 Biotechnology & Standards Conference, The Prospects for a Life Sciences Standards Revolution, sponsored by the Global Biological Standards Institute, MIT, Cambridge, MA, October, 2013.

"Biofabrication: An Assembly Paradigm for Device Construction that Facilitates Communication",
28th International Forum and Exhibition Process Analytical Technology (Process Analysis & Control), Arlington, VA, January, 2014.
WCBP 2014 – The 18th Symposium on the Interface of Regulatory and Analytical Sciences for Biotechnology Health Products, CASSS, invited dinner speaker, Waters Corporation, Washington, DC, January, 2014.
3rd International Symposium on Higher Order Structure of Protein Therapeutics, Arlington, VA, February, 2014.

"Tuning Effector Molecules to Guide Biological Function at the Mesoscale", National Institutes of Standards and Technology, Gaithersburg, MD, 2014

"Tuning Effector Molecules to Guide Biological Function at the Mesoscale", Marvin Johnson Award Address, 247th ACS National Meeting, Division of Biochemical Technology, Dallas, TX, March, 2014

"Biofabrication: An Assembly Paradigm that Facilitates Biological Discovery and Characterization", invited oral presentation at 2014 Biomanufacturing Technology Summit, Emerging Strategies for the Production and Characterization of Biosimilars, Rockville, MD, June, 2014

"Building the Biotechnology Toolbox: At the Intersection of Biofabrication and Systems Biology", invited Keynote at Austrian Center for Industrial Biotechnology, Graz, Austria, September, 2014

"Opening Lines of Communication: Quorum Sensing at the Intersection of Synthetic Biology and Microelectronics", invited Keynote at 5th ASM Conference on Cell-Cell Communication in Bacteria, American Society of Microbiology, San Antonio, TX, October, 2014.

"Linking Synthetic Biology with Biofabrication: An Innovation Paradigm", Keynote presentation at the Korean Society for Biotechnology and Bioengineering, Yeosu, S. Korea, April, 2015.

"Biofabrication of Multienzyme Complexes for Enhanced Function", Invited presentation at RPP8, A Comparative View on Host Physiology, European Federation of Biotechnology, Mallorca, Spain, April 2015.

"Designing Microbes for Executive Function", Invited Seminar at Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, April, 2015.

"Designing Microbes and Nanomaterials for Executive Function, Center for Healthcare Innovation, Stevens Institute of Technology, May, 2015.

"Designing Cells for Executive Function: Enablers of Molecular Communication", Invited Presentation at the 2015 CBD S&T Conference, St. Louis, MO, May, 2015.

"Engineering Cells and Cell Networks for 'Executive Function' and Discovery", Keynote presentation at Opening of SynCTI, Center for Synthetic Biology for Clinical & Technological Innovation, National University of Singapore, Singapore, Sept., 2015.

"The Convergence of Synthetic Biology and Biofabrication: Guiding Biological Function at the Mesoscale", Invited Plenary Presentation at the Industrial Physics Forum, AVS International Symposium and Exhibition, San Jose, CA, Oct. 2015.

RESEARCHERS PRESENTLY SUPERVISED:

Dr. Chen-Yu Tsao, Research Associate
Mr. Darryl Sampey (Ph.D., BIOE)
Dr. Pricilla Hauk, Research Associate
Dr. David Quan, Research Associate
Mr. Narendranath Bhokisham (Ph.D., MOCB)
Dr. Tanya Gordonov, Research Associate
Ms. Melissa Rhodes (Ph.D., BIOE)
Ms. Chelsea Virgile (Ph.D., BIOE)

Ms. Hana Ueda (Ph.D., Applied Math)
Mr. Ryan McKay (Ph.D., BIOE)
Mr. John Kerwin (Ph.D., ENCH)
Ms. Kristina T. Stephens (Ph.D., BIOE)
Mr. Wu Shang (Ph.D., BIOE)

UNDERGRADUATE RESEARCH ADVISEES:

Ms. Sabine Munkel (Germany),	1989-90	employment, Lonza, Germany
Mr. Minh Pham,	1989-91	graduate school, UMCP
Mr. Eric Harman,	1990-91	graduate school, Carnegie Mellon University
Mr. Pat Santini,	1990-91	employment, family business
Mr. Manu Seghal,	1990-91	medical school, Mayo Medical Center, MN
Ms. Michelle Heard,	1991-92	employment, International Paper Company
Mr. Brian Sines,	1992-93	graduate school, Virginia Tech
Ms. Kelly Wester	1992-93	school teacher, greater Boston area
Mr. Thomas Franey,	1993-94	employment, International Paper Company
Ms. Celeste Powell,	1993-94	graduate school, University of Pittsburgh
Mr. Biruk Kebede,	1993-94	graduate school, UMCP
Ms. Gail Dempsey,	1995	employment, SAIC
Ms. Susanna Naggie,	1995-98	medical school, Johns Hopkins University (fall '98)
Mr. Darryl Sampey,	1995-97 (Honors Thesis)	employment, North American Vaccine
Ms. Sonja Sharpe,	1996-97 (Honors Thesis)	graduate school, MIT
Mr. Holger Ebhardt,	1997	graduate school, Germany
Ms. Mira Shiloach,	1997-2000	employment, Biotechnology industry (Israel)
Ms. Regina Yoo,	1998-2000	employment, Dept. Mech. Eng., UMCP
Ms. Amanda Chambers	2001-2004	employment, DOD, ECBC, Aberdeen Proving Grounds, MD
Mr. Brian Pridgen	2003	REU student from NCState University.
Ms. Laura Carpin	2003-2006	medical school, MD/PhD, Baylor College of Medicine, TX
Mr. Jim Abshire	2006-2008	graduate school, MIT (biological engineering)
Ms. DT Howarth	2006-09	medical school, MD, University of Maryland
Ms. Lindsay D'Ambrosio	2008-09	graduate school, NCState (environmental sciences)
Ms. Jessica Stewart	2008-11	employment, Accenture
Mr. Apoorv Gupta	2008-12	won Goldwater Scholarship, 2011
Ms. Kathy Lee	2008-11	medical school, JHU
Ms. Shira Cramer	2010-11	graduate school, UT Austin (chemical engineering)
Mr. Karan Rajae	2010-2012	graduated
Mr. Osama Eshera	2008-09	graduated
Mr. Zach Russ	2010-11	graduate school, UC Berkeley (bioengineering)
Mr. Benjamin McDermott	2012-12	undergraduate, Old Dominion University (electrical engineering)
Ms. Xinyi Zhao	2012-14	graduate school, UC Berkeley (bioengineering)
Mr. Haig Pakhchanian	2013-15	
Mr. Aditya Biswas	2013-13	
Mr. Nathan Barber	2013-15	graduated
Ms. Rebecca Zubajlo	2013-2015	graduate school, MIT (mechanical engineering)
Mr. Matthew Fabian	2014-2014	summer program
Ms. Allison Dunn	2014-2014	graduated
Ms. Erica Choi	2014-2014	graduated
Ms. Nadia Abutaleb	2014-	
Ms. Eli Pottash	2015-	
Ms. Ellie Stern	HS	
Mr. Milad Emamian	2014-2014	Postbaccalaureate at NIH w/ Dr. Mark Knepper

UNDERGRADUATE RESEARCHERS IN BIOPROCESS SCALEUP FACILITY (1994 - 2002):

Mr. Mike Hendershot,	Becton Dickinson, MD
Mr. Mike O'Mara,	BioScience Contract Production Corp., MD
Mr. David Ruben,	Human Genome Sciences, MD
Ms. Clara Mosby,	University of Maryland, Baltimore, (Medical School), MD
Mr. Ken Lee,	Pennsylvania State University Medical College, Hershey PA

Ms. Shing Fen Koa,	Pennsylvania State University Medical College, Hershey, PA
Ms. Michelle Baroody,	Johnson & Johnson, NJ
Ms. Yu Zhong,	Human Genome Sciences, MD
Mr. Ben Woodard,	Manager of BSF, UMCP
Mr. Maxime Guindo,	Bioscience Contract Production Corp.
Mr. Alex Smith,	Human Genome Sciences, MD
Mr. Nitin Goel,	U. Wisconsin, Genetics Ph.D. program
Ms. Shana Hopkins,	University of Maryland Medical School
Mr. Sean Dambaugh,	Human Genome Sciences, Inc.
Mr. Victor Powell,	UMCP Department of Chemical Engineering (graduate school)
Ms. Kelly Burke,	Human Genome Sciences, Inc.
Mr. Don Startt,	Human Genome Sciences, Inc.
Mr. Jeff Enama	SAIC, Ft. Detrick, MD.
Mike McKinney	Exxon
Matt Kellinger	grad school- U Texas
Andy Singer	NABI
Mike Ratino	Human Genome Sciences, Inc.
Nathan Forrest	Cambrex, Baltimore
Andrew Marple	National Cancer Institute, NIH
John Kerwin	Aeras
Kai Rajan	Human Genome Sciences, Inc.
Dan Forrest	went to industry
Kevin Knapstein	went to HGS, back to BSF
Jess Willis	contractor
Andy Lees, Ph.D.	contractor

THESES COMPLETED:

M.S.

Mr. Oscar Edwin Quiroga, "Heterogeneity and Antibiotic Resistance Characteristics in Recombinant *E. coli* Cultures", August, 1991, currently faculty member in Dept. Chemical Engineering, San Francisco Xavier University in Sucre, Bolivia.

Ms. Delia Marie Ramirez Leon, "Optimal Feeding Strategies for the Production of Foreign Protein", August, 1991, (continued for Ph.D.)

Ms. Tracey Renay Pulliam, "Optimal Expression and Separation of HIV-Fusion Peptides", December, 1993, (continued for Ph.D.)

Mr. Tsu-shun Lee, "Using *Alcaligenes xylosoxydans ssp. xylosoxydans* for Degrading Thiodiglycol: The Primary Hydrolysis Product of Sulfur Mustard", August, 1994, (continued for Ph.D.).

Mr. Minh Quan Pham, "Bioreactor Designs for the Degradation of Thiodiglycol Using *Alcaligenes xylosoxydans* (SH91)", July, 1995, (continued for Ph.D.)

Mr. Yu Chen Hu, "A Tubular Reactor for the Infection of Insect Cells with Recombinant Baculovirus", November, 1995, (continued for Ph.D.)

Mr. Ryan Timothy Gill, "An Investigation of E. coli Stress: The Physiological Response to Manipulation of Redox Potential and Partial Purification of a Stress Induced Protease", August, 1997, (cont. for Ph.D.)

Mr. Nimish G. Dalal, "An Investigation of Cell Death in *Spodoptera frugiperda*-9 (Sf-9) Insect Cells", February, 1998, (continued for Ph.D.)

Mr. Matthew P. DeLisa, "An Investigation of Green Fluorescent Protein for Monitoring and Controlling Recombinant Protein Expression in Low and High Cell Density Cultivations of *Escherichia coli*", November, 1998, (continued for Ph.D.)

Mr. Javier Nazzario-Larrieu, "An Overall Carbon Flow Distribution Model for *Bordetella pertussis* Metabolism", December, 1999. North American Vaccine, Inc., Columbia, MD; Harvard Medical School, Fall, 2000.

Ms. Ashley Kamia Doleman, "Evaluation of Stresses Elicited in Recombinant *E. coli* Fermentation", December, 1999. (presently Exxon/Mobil Co.).

Mr. Miguel Valle, "Characterization of a Process for Protein Production from Transformed *Drosophila melanogaster* Schneider 2 Cells", June, 2000. (presently at Human Genome Sciences, Inc., Gaithersburg, MD).

Ms. Nicole Bleckwenn, "Heterologous Protein Production in *Drosophila melanogaster* Larvae", May, 2001. (continued for Ph.D.)

Ms. Shannon Kramer, "Using a GFPuv-specific Optical Probe to Determine Harvest Time in Baculovirus-infected *Trichoplusia ni* Larvae," May, 2001. (continued for Ph.D.).

Mr. Anandkumar G. Daga, “Quorum Sensing in silico: Kinetic Modeling in *Escherichia coli* Through Stochastic Petri Nets”, August, 2001. (went to U. Washington for MBA).
Mr. Jose R. Garcia Reyes “Monitoring *nar*-GFP Expression and AI-2 Production in Oxygen-Limited Batch and Fed-Batch Fermentations”, August, 2002.
Mr. David Small, “A Simplified Approach for Protein Purification”, August, 2003. (continued for Ph.D.)
Ms. Karen Carter, “Antisense RNA for Downregulating Protease Production in *E. coli*”, August, 2003. (continued for Ph.D.)
Ms. Angela Lewandowski, “Tyrosine-Based "Activatable Pro-Tag": Enzyme-Catalyzed Protein Capture and Release”, December, 2004. (continued for Ph.D.)
Ms. Rebecca M. Lennon, “Inhibitors of Autoinducer-2 Quorum Sensing and Their Effect on Bacterial Biofilm Formation”, July, 2007. (went to U. Wisconsin for Ph.D.)
Ms. Christina K. Giblin, “Bacterial Cross Talk in Mixed Culture”, July, 2007.
Ms. Dulciana Chan, “Arrhythmogenesis and Conduction Properties of Cardiomyocytes in Response to Dyssynchronous Mechanical and Electrical Stimulation”, December, 2010 (currently, FDA).
Mr. Steven M. Graff, “A Mathematical Model to Study the Role of the Lsr Intergenic Region in Mediation of Autoinducer-2 Quorum Sensing in *Escherichia coli*, December, 2013.

Ph.D. *(present locations indicated)*
Mr. Yung Fei Ko, "An Integrated Metabolic Modeling Approach for Describing the Energy Efficiency of *Escherichia coli*: Theoretical Development and Application" (co-advisor), December, 1992, formerly Professor, Dept. Chemical Engineering, Mingchi Institute of Technology, Taipei Hsien, Taiwan; currently President Chang Gung Biotechnology Corp., Inc.
Ms. Sarah Waterman Harcum, "Stress Response Dynamics in Induced Recombinant *Escherichia coli*", May, 1993, presently Professor, Dept. Bioengineering, Clemson University, Clemson, SC. NSF CAREER Awardee.
Mr. Min-Ying Wang, "Optimization of Recombinant Protein Production and Single-Step Purification in Insect Cell Baculovirus Expression System", May, 1994, presently Professor, Department of Chemical Engineering, Chung Hsing University, Taichung, Taiwan, ROC.
Ms. Delia Maria Ramirez Leon, "Development of Feeding Strategies for Inhibition of Stress Responses in Recombinant Systems", August, 1995, presently patent examiner at U.S. Patent Office.
Ms. Tracey Renay Pulliam-Holoman, "Stress-Induced Proteolysis in *Escherichia coli*", December, 1996, was formerly Assistant Professor, Dept. of Chemical Engineering, College Park, MD, has since left academia for family. NSF CAREER Awardee.
Mr. Tsu-shun Lee, "Biodegradation and Biotransformation of Thiodiglycol, the Primary Hydrolysis Product of Sulfur Mustard", December, 1997, presently Deputy Director of Process Technology at Sanofi Pasteur, Swiftwater, PA.
Mr. Yu-Chen Hu, “Coordinated Synthesis of Chimeric Infectious Bursal Disease Virus-like Particles in Insect Cells”, January, 1999, presently Professor and Chair, Department of Chemical Engineering, National Tsing-Hua University, Taiwan.
Mr. Minh-Qhan Khuc Pham, “Insect Larvae, An Efficient Bioreactor for Recombinant Protein Production”, February, 1999, founder and board member, Chesapeake PERL, Inc.; employed at private patent law office, Berenato & White, LLC, Bethesda, MD.
Mr. Ryan Timothy Gill, “Dynamic Analysis of Global Stress Gene Transcription During Recombinant *Escherichia coli* Fermentation”, September, 1999. (presently Associate Professor, Dept. of Chem. and Biol. Eng., University of Colorado, Boulder, NSF CAREER Awardee).
Mr. Chi-Fang Wu, “A Green Fluorescent Protein Fusion Strategy for Monitoring the Expression, Separation and Biological Activity of Organophosphorus Hydrolase”, December, 1999. (presently at Becton Dickinson, San Diego, CA).
Mr. Ranjan Srivastava, “Analysis and Modeling of the Effects of mRNA Antisense Targeted Against the σ^{32} Response Sigma Factor in *Escherichia coli”*, December, 1999. (presently Associate Professor, Dept. of Chemical, Materials, and Biomolecular Engineering, University of Connecticut, Storrs, CT)
Ms. Shu-Hua Chan, (Co-advisor), “The Metabolic Engineering of *Alcaligenes xylosoxydans ssp. xylosoxydans* (SH91)”, June, 2000. (presently in Northern, VA., raising family).
Mr. Matthew P. DeLisa, “Harnessing the *Escherichia coli* Quorum Circuit: A Study of Bacterial Cell-Cell Communication and Density Dependent Gene Regulation for Enhanced Recombinant Protein Yield”, December, 2000. (presently, Professor, School of Chemical Engineering, Cornell University, NSF CAREER Awardee).
Mr. Nimish Girish Dalal, “Baculovirus Expression Vector System: Tools for Aiding Protein Expression”, May, 2001. (presently Bristol Myers Squibb, Syracuse, NY).
Ms. Shannon F. Kramer, “*In vivo* Manipulation of *Trichoplusia ni* Larvae using RNA Interference”, December, 2002. (presently Senior Research Associate, Baylor University College of Dentistry, Dallas, TX).
Mr. Hyunmin Yi, “Chitosan as a Platform for Biomolecule Assembly and Biosensing Applications”, August, 2003. (presently, Associate Professor, Dept. of Chemical and Biological Engineering at Tufts University).

Ms. Nicole A. Bleckwenn, "Protein Production Development with Recombinant Vaccinia Virus", May, 2004 (currently at MedImmune, Inc., Gaithersburg, MD)
Mr. Liang Wang, "Autoinducer AI-2 Mediated Quorum Sensing in *E. coli*", December, 2004, (presently at Superarray Biosciences, Rockville, MD).
Mr. John C. March, "Metabolic Engineering of Eukaryotic Signal Transduction in *Drosophila* Schneider 2 (S2) Cell Culture", May, 2005. (presently Associate Professor, Department of Biological and Environmental Engineering, Cornell University).
Ms. Songhee Kim, "Viewing Quorum Sensing in a Global Network: Studies on SdiA-dependent System 1and Autoinducer-2 Mediated System-2 of Non-pathogenic *Escherichia coli* K-12", August, 2005 (was a postdoctoral research associate at Louisiana State University, faculty member at KIST).
Mr. Chong Yung, "Tissue and Metabolic Engineering of Biohybrid Artificial Organs", December, 2005, (was a postdoctoral research associate at Harvard University, Don Ingber; currently Agilent, San Jose, CA).
Ms. Jun Li, "Systematic Investigation of Quorum Sensing in *E. coli*", December, 2006 (at USPTO).
Mr. David Small, "Comparative global transcription analysis of sodium hypochlorite, hydrogen peroxide, and peracetic acid on *Pseudomonas aeruginosa*, May, 2007 (currently Director, Production, UPM, Inc.).
Ms. Angela T. Lewandowski, "Assembly of Quorum Sensing Pathway Enzymes onto Patterned Microfabricated Devices", July, 2007. (left Genzyme, presently at Bristol Myers Squibb, Boston, MA).
Mr. Chen-Yu Tsao, "Rewiring Quorum Sensing Circuitry for Recombinant Protein Production in *E. coli*", July, 2007.
Mr. Chi-Wei Hung, "RNA Packaging and Gene Delivery using TMV Pseudovirions", August, 2008
Mr. Rohan Fernandes, "Biological Nanofactories: Altering Cellular Response via Localized Synthesis and Delivery", November, 2008. (presently Asst. Professor at Children's National Medical Center, Washington, DC).
Mr. Colin G. Hebert, "RNA Interference mediated suppression of Tn-Caspase-1 as a means of investigating apoptosis and improving recombinant protein production in *Trichoplusia ni* cells", November, 2008. (after NRL, now V.P. at LumaCyte, Charlottesville, VA).
Ms. Karen Carter, "Harnessing the Potential of the *Escherichia coli* RpoS Phenotype via an Inducible Small RNA Regulatory Platform", May, 2011. (currently at Precision for Medicine, MD).
Mr. Christopher Byrd, "Local and Global Gene Regulation Analysis of the Autoinducer-2 Mediated Quorum Sensing Mechanism in *Escherichia coli"*, May, 2011. (after leading ARL's Biotechnology Program, now Asst. Prof. U.S. Military Academy, West Point, NY).
Ms. Varnika Roy, "Altering the AI-2 Mediated Quorum Sensing Circuitry to Quench Bacterial Communication Networks", May, 2011. (presently at MedImmune, Inc.)
Mr. Hsuan-Chen Wu, "Incorporation of Bacterial Quorum Sensing in Synthetic Biology", May, 2012. (presently Asst. Prof., National Taiwan University, Taiwan).
Mr. David Nathan Quan, "Contextualization of the *E. coli* Lsr System" Relative Orthology, Relative QS Activity, and Emergent Behavior, May, 2015.
Mr. Amin Zargar, "Investigations in Interkingdom Signaling and Control of QS-dependent Phenotypes", May, 2015. Postdoc with WEB, now with Jay Keasling, UC Berkeley.
Ms. Tanya Gordonov (Tschirhart), "Bridging the Biology-Electronics Communication Gap with Redox Signaling, July, 2015.
Ms. Jessica L. Terrell, "Bioengineered Conduits for Directing Digitized Molecular-Based Information", July, 2015. (presently at Army Research Laboratory, Adelphi, MD).

Post-Doctoral / Visiting Professors

Dr. David A. Lindsay, 1995, presently at MedImmune, Inc., Gaithersburg, MD.
Dr. Min-Ying Wang, 1995 (Co-advisor with J. Shiloach, D. Kaslow, NIH), Assoc. Prof., Taiwan (as above)
Dr. Michael Ciocci, 1995-1996 (Abzena, Inc., Bristol, PA)
Dr. Takeshi Gotoh, 1996-1997 (presently Professor, Akita University, Japan)
Dr. Hyung Joon Cha, 1997-1999, presently Professor, POSTECH University, Pohang, South Korea
Dr. Hae Jeong Chae, 1998-2000, presently Professor, Hoseo University, South Korea
Dr. Guneet Kumar, 1998 – 2002, went to work for LifeTime Pharmaceuticals, Inc.
Dr. Chi-Fang Wu, 2000- 2002, presently at Beckton Dickinson, San Diego, CA.
Dr. Yoshifumi Hashitmoto, 2003 – 2003, presently at Protein Sciences Corp., CT
Dr. Hyunmin Yi, 2003-2005, presently Associate Professor, Tufts University.
Dr. Eunjeong (Katie) Kim, 2004-2006, presently at KRIST, S. Korea.
Dr. Hosan Kim, 2006-2006, presently DOD, Arlington VA
Dr. Wook Chang, 2003-2007, presently Associate Professor, National University of Singapore, Singapore
Dr. Sara Hooshangi, 2007-2009, after Asst. Prof., Union College, Albany, NY, now faculty, George Washington U.
Dr. Hyeung-jin Jang, 2006-2009, presently Assistant Professor, Kyung Hee University, S. Korea
Dr. Chantal Nde, 2007-2010, presently at Kraft Foods, Inc.

Dr. Bryn Adams, 2008-2011, presently at Army Research Laboratory, Adelphi, MD
Dr. Chen-Yu Tsao, 2008 – present
Dr. Xiaolong Luo, 2011-2013, presently Asst. Prof. Catholic University, Washington DC
Dr. Karen Carter, 2011 – 2014
Dr. Hsuan-Chen Wu, 2012 – 2015, presently Asst. Prof. National Taiwan University, Taipei, TW.
Dr. Niketa Jani, 2012 – 2014, presently State of Maryland Health Services, Baltimore, MD
Dr. Pricilla Hauk, 2014 - present

UMBI INVENTION DISCLOSURES and PATENTS:

Invention Disclosures

"A Non-Invasive Method for Monitoring Hazardous Chemical Hydrolysis and Biodegradation Processes", July 21, 1995, w/ Wang, Weigand, Lee, Wey.
"A Tubular Reactor for Analysis of Virus-Cell Interactions", 1996, w / Hu, Wang
"Bioprocess for the Production of Recombinant Anti-Botulinum Toxin Antibody using Luria Broth" Oct. 15, 1996, w / G. Olsen (ERDEC).
"BioBait™ - All Natural Green Fluorescent Insect Larvae Fish Food and Bait", Oct. 21, 1996, w / Cha, Pham.
"Semi-continuous Expression of Recombinant Proteins in Insect Larvae under Conditions of Ensured Optimality", Oct. 21, 1996, w / Cha, Pham.
"Non-invasive 'Stress Probe' for E. coli", June 30, 1997, w/Cha, H.J.
“E. coli Stress Mapping Membrane”, Nov. 10, 1998, w/Gill
“RTPCR Kit for Prokaryotic Differential Display”, Nov. 10, 1998.
“Autoinduced Protein Expression”, September, 2007.

Patents

“A Process for Continuous Optimized Protein Production in Insect Larvae” (w/Cha, Pham), filed Sept. 1997, allowed, July, 2000, issued Nov., 2000, U.S. Patent No. 6153409.
“A Process for Continuous Optimized Protein Production in Insect Larvae” (w/Cha, Pham, Khanna), reinvention filed Sept. 200, awarded Sept. 2006, U.S. Patent No. RE39,270.
“Method of Differential Display of Prokaryotic Messenger RNA by RTPCR” (w/Gill), filed Mar. 2000, issued, July, 2004, U.S. Patent No. 6759195.
“Assembly of Chitosan onto an Electrode Surface” (w/Yi, Rubloff, Ghodssi, Payne), U.S. Patent No. 60/405,582. filed Sept., 2003, (pending).
“Spatially Selective Deposition of Polysaccharide Layer onto Patterned Template” (w/Ghodssi, R; Payne, G; Rubloff, G; Wu, L.q.; Yi, H; Losert, W; English, D.), U.S. Patent No. 7,790,010 B2, issued Sept. 7, 2010.
“Bioprocess for the production of recombinant anti-botulinum toxin antibody” (w/Gilbert G. Olsen), U.S. Patent No. 7,157,562, filed April, 2003, issued, January, 2007).
“Biolithographic Deposition and Materials and Devices Formed Therefrom” (w/Payne, G.F., Rubloff, G.W., Yi, H., Fernandes, R., Wu, L.-Q., Ghodssi, R.), U.S. Patent No. 7,820,227, filed 2/20/04, issued October 26, 2010.
“Phosphorylated and Branched Dihydroxy-pentane-dione (DPD) Analogs as Quorum Sensing Inhibitors in Bacteria”, US Patent No. 8,952,192, February 10, 2015, Herman Sintim, William Bentley, Varnika Roy, Jacqueline Smith, Reza Ghodssi, Marianna Tsacoumis Meyer.
“Electroaddressing and In-film Bioprocessing Using Stimuli-Responsive Hydrogel-Forming Polymers”, US Patent Application No. 20120103822, Xiao-Wen Shi, Yi Liu, Gregory F. Payne, Xiaohua Yang.
“Fibrous Assemblies for Antibody Presentation, and Multiplexed Antigenic Analysis using Same”, US Patent No. 8791239, July, 29, 2014, Xiao-Wen Shi, Hsuan-Chen Wu, Gregory F. Payne and William E. Bentley.

REFEREED PUBLICATIONS IN ARCHIVAL JOURNALS:

1. Bentley, W. E. and D. S. Kompala (1989), A Novel Structured Kinetic Modeling Approach for the Analysis of Plasmid Instability in Recombinant Bacterial Cultures, *Biotechnology and Bioengineering*, 33(1): 49-61.

2. Bentley, W. E. and D. S. Kompala (1990), Stability in Recombinant Continuous Cultures - A Metabolic Approach, *Biotechnology Letters*, 12(5):329-334.

3. Bentley, W. E. and D. S. Kompala (1990), Plasmid Instability in Batch Cultures of Recombinant Bacteria: A Laboratory Experiment, *Chemical Engineering Education*, 24(3):168-172.

4. Bentley, W. E. and D. S. Kompala (1990), Optimal Induction of Protein Expression in Recombinant Bacterial Cultures, in Biochemical Engineering VI, *Annals New York Academy of Sciences*, 589:120-138.

5. Bentley, W.E., Mirjalili, N., Andersen, D. C., Kompala, D. S. and R. H. Davis (1990), Plasmid Encoded Protein: The Principal Factor in the "Metabolic Burden" Associated with Recombinant Bacteria, *Biotechnology and Bioengineering*, 35(7):668-681.

6. Bentley, W. E., Davis, R. H. and D. S. Kompala (1991), Dynamics of Induced CAT Expression in *E. coli*, *Biotechnology and Bioengineering*, 38:749-760.

7. Harcum, S. W., Ramirez, D. M. and W. E. Bentley (1992), Optimal Nutrient Feed Policies for Heterologous Protein Production, *Applied Biochemistry and Biotechnology*, 34/35:161-173.

8. Ramirez, D. M. and W. E. Bentley (1993), Enhancement of Recombinant Protein Synthesis and Stability via Coordinated Amino Acid Addition, *Biotechnology and Bioengineering*, 41:557-565.

9. Wang, M.-Y., Kwong, S., and W. E. Bentley (1993), Effects of Oxygen/Glucose/Glutamine Feeding on Insect Cell Baculovirus Expression: A Study of Epoxide Hydrolase Production, *Biotechnology Progress*, 9:355-361.

10. Wang, M.-Y., Vakharia, V., and W. E. Bentley (1993), Expression of Epoxide Hydrolase in Insect Cells: A Focus on the Infected Cell, *Biotechnology and Bioengineering*, 42:240-246.

11. Bentley, W. E. and O. E. Quiroga (1993), Investigations of Subpopulation Heterogeneity and Plasmid Stability in Recombinant *E. coli* via a Simple Segregated Model, *Biotechnology and Bioengineering*, 42:222-234.

12. Ko, Y.-F., Bentley, W. E. and W. A. Weigand (1993), An Integrated Metabolic Modeling Approach to Describe the Energy Efficiency of *E. coli* Under Oxygen-Limited Conditions: Cellular Energetics and Carbon Flux, *Biotechnology and Bioengineering*, 42:843-853.

13. Harcum, S. W. and W. E. Bentley (1993), Detection, Quantification, and Characterization of Proteases in Recombinant *Escherichia coli*, *Biotechnology Techniques*, 7:441-447.

14. Harcum, S. W. and W. E. Bentley (1993), Response Dynamics of 26, 34, 39, 54, and 80 kDa Proteases in Induced Cultures of Recombinant *Escherichia coli*, *Biotechnology and Bioengineering*, 42:675-685.

15. Wang, M.-Y., Wester, K. and W. E. Bentley (1993), Glutamine Determination in Insect Cell Culture Media, *Biotechnology Techniques*, 7:841-846.

16. Ko, Y.-F., Bentley, W. E. and W. A. Weigand (1994), A Metabolic Model of Cellular Energetics and Carbon Flux During Aerobic *E. coli* Fermentation, *Biotechnology and Bioengineering*, 43:847-855 .

17. Wang, M.-Y., Bentley, W. E. and V. Vakharia (1994), Purification of a Recombinant Protein Produced in a Baculovirus Expression System by Immobilized Metal Affinity Chromatography, *Biotechnology and Bioengineering* 43:349-356.

18. Wang, M.-Y. and W. E. Bentley (1994), Continuous Insect Cell (Sf-9) Culture with Aeration through Sparging, *Applied Microbiology and Biotechnology* 41:317-323.

19. Bentley, W. E., Wang, M.-Y. and V. Vakharia (1994), Development of an Efficient Bioprocess for Poultry Vaccines Using High Density Insect Cell Culture, *Annals New York Academy of Sciences* 745:336-359.

20. Bentley, W.E. (1994), Undergraduate Researchers within a Biochemical Engineering Research Program: Factors Influencing Research Quality and Learning Experience, *Annual Conference Proceedings, American Society for Engineering Education*, 1994(1):1461-1464.

21. Bentley, W.E., Kebede B., Franey, T., and M.Y. Wang (1994), Segregated Characterization of Recombinant Epoxide Hydrolase Synthesis via the Baculovirus / Insect Cell Expression System, *Chemical Engineering Science*. 49:4133-4141.

22. Pulliam, T. R., Winston, S. and W.E. Bentley (1994), Expression and Aqueous Two-Phase Separation of HIV_{582}-β-gal Fusion Protein, *Journal of Long-Term Effects of Medical Implants.* 4(1): 56.

23. Chen, Q., Bentley, W.E. and W. A. Weigand (1995), Optimization for a Recombinant *E. coli* Fed-Batch Fermentation, *Applied Biochemistry and Biotechnology*, 51/52: 449-461.

24. Ko, Y.-F., Bentley, W.E., and W. A. Weigand (1995), The Effect of Cellular Energetics on Foreign Protein Production, *Applied Biochemistry and Biotechnology*, 50:145-159.

25. Ramirez, D. M. and W. E. Bentley (1995), Fed-Batch Feeding and Induction Policies that Improve Foreign Protein Synthesis and Stability by Avoiding Stress Responses, *Biotechnology and Bioengineering*, 47:596-608.

26. Pham, M.Q., Harvey, S.P., Weigand, W.A., and W.E. Bentley (1996) Reactor Comparisons for the Biodegradation of Thiodiglycol, a Product of Mustard Gas Hydrolysis, *Applied Biochemistry and Biotechnology*, 57/58: 779-789.

27. Wang, M.Y., Pulliam, T.R., Valle, M., Vakharia, V. and W.E. Bentley (1996) Kinetic Analysis of Alkaline Protease Activity, Recombinant Protein Production and Metabolites for Infected Insect (Sf-9) Cells under Different DO Levels, *Journal of Biotechnology*, 46: 243-254.

28. Pilon, A., Yost, P., Chase, T. Lohnas, and W.E. Bentley (1996) High-level Expression and Efficient Recovery of Ubiquitin Fusion Proteins from *Escherichia coli*, *Biotechnology Progress*, 12:331-337.

29. Lee, T.S., Pham, M.Q., Weigand, W.A., Harvey, S.P., and W.E. Bentley (1996) Bioreactor Strategies for the Treatment of Growth-Inhibitory Waste: An Analysis of Thiodiglycol Degradation, the Main Hydrolysis Product of Sulfur Mustard, *Biotechnology Progress*, 12:533-539.

30. Albano, R, Randers-Eichhorn, L., Bentley, W.E., and G. Rao (1996) Quantitative Measurement of Green Fluorescent Protein Expression and Chromophore Cyclization, *Biotechnology Techniques*, 10: 953-958.

31. Pulliam, T. R., Winston, S., and W.E. Bentley (1997) Tryptophan Regulated Expression and Aqueous Two-Phase Separation of Recombinant HIV-Fusion Peptides, *Enzyme and Microbial Technology*, 20: 47-51.

32. Lee, T.-S., Weigand, W.A., and W. E. Bentley (1997) Observations of Metabolite Formation and Variable Yield in Thiodiglycol Biodegradation Processes: Impact on Reactor Design, *Applied Biochemistry and Biotechnology*, 63/65: 743-757.

33. Hu, Y.C., Wang, M.Y., and W.E. Bentley (1997) A Tubular Bioreactor for the Infection of Insect Cells with Recombinant Baculovirus, *Cytotechnology*, 24: 143-152.

34. Randers-Eichhorn, L., Albano, C.R., Sipior, J., Bentley, W.E., and G. Rao (1997) An On-line Green Fluorescent Protein Sensor with LED Excitation, *Biotechnology and Bioengineering*, 55: 921-927.

35. Naggie, S., Hu, Y.C., Pulliam-Holoman, T.R., and W.E. Bentley (1997) Substrate (Gelatin) Gel Electrophoretic Method for Analysis of Protease Activity in Insect (Sf-9) Cells, *Biotechnology Techniques*, 11: 297-301.

36. Pilon, A., Yost, P., Chase, T. Lohnas, and W.E. Bentley (1997) Ubiquitin Fusion Technology: Bioprocessing of Peptides, *Biotechnology Progress*, 13:374-379.

37. Cha, H.J., Pham, M.Q., Rao, G., and W. E. Bentley (1997) Expression of Green Fluorescent Protein in Insect Larvae and its Application for Heterologous Protein Production, *Biotechnology and Bioengineering*, 56:239-243.

38. Cha, H.J., Choi, S.S., Yoo, Y.J., and W.E. Bentley (1997) Enhancement of Production of Cloned Glucoamylase under Low Aeration Condition from Recombinant Yeast Using a SUC2 Promoter, *Process Biochemistry*, 32, 679-684.

39. Cha, H.J., Gotoh, T., and W. E. Bentley (1997) Simplification of Titer Determination for Recombinant Baculovirus by Green Fluorescent Protein Marker, *BioTechniques*, 23: 782-786.

40. Gill, R.T., Cha, H.J., Jain, A., Rao, G., and W.E. Bentley (1998) Generating Controlled Reducing Environments in Aerobic Recombinant *E. coli* Fermentations: Effect on Cell Growth, Oxygen Uptake, and *in vivo* CAT Activity, *Biotechnology and Bioengineering*, 59:248-259.

41. Albano, R., Randers-Eichhorn, L., Bentley, W.E., and G. Rao (1998) Green Fluorescent Protein as a Real Time Quantitative Reporter of Heterologous Protein Production, *Biotechnology Progress*, 14: 351-354.

42. Naggie, S. and W.E. Bentley (1998) Appearance of Protease Activities Coincides with p10 and polyhedrin-driven Protein Production in Baculovirus Expression System: Effects on Yield, *Biotechnology Progress*, 14:227-232.

43. Gotoh, T., Iwanaga, T., Kikuchi, K, and Bentley, WE (1998) A Novel Support for Membrane Enzyme Immobilization: Gel Beads Containing Polymerized Phospholipid Vesicles, *Biotechnology and Applied Biochemistry*, 27: 197-204.

44. Bentley, W.E., Madurawe, R.D., Gill, R.T., Shiloach, M., Chase, T.E., Pulliam-Holoman, T.R., and J.J. Valdes (1998) Generation of a Histidine-Tagged Antibotulinum Toxin Antibody Fragment in *E. coli*: Effects of Post-induction Temperature on Yield and IMAC Binding-Affinity, *Journal of Industrial Microbiology and Biotechnology*, 21:275-282.

45. Pham, M.Q., Naggie, S., Wier, M., Cha, H.J., and W.E. Bentley (1999) Human Interleukin-2 Production in Insect (*Trichoplusia ni*) Larvae: Effects and Partial Control of Proteolysis, *Biotechnology and Bioengineering*, 62:175-182.

46. Cha, H.J., Srivastava, R., Vakharia, V., Rao, G., and W. E. Bentley (1999) Green Fluorescent Protein as a Non-invasive "Stress Probe" in Resting Recombinant *Escherichia coli* Culture, *Applied and Environmental Microbiology*, 65:409-414.

47. Cha, H.J., Dalal, N.G., Vakharia, V.N., and W. E. Bentley (1999) Expression and Purification of Human Interleukin-2 as a Fusion with Green Fluorescent Protein in Suspended Sf-9 Insect Cells, *Journal of Biotechnology*, 69:9-17.

48. Cha, H.J., Dalal, N.G., Pham, M.Q., and W.E. Bentley (1999) Purification of Human Interleukin-2 Fusion Protein Produced in Insect Larvae is Facilitated by Fusion with Green Fluorescent Protein and Metal Affinity Ligand, *Biotechnology Progress*, 15(2), 283-286.

49. Wang, M.Y., Wang. S.L., Bentley, W.E., and G.C. Liu (1999) Using Glucose Feed to Regulate pH Values of Culture Media and Increase the Production of Baculovirus (BmNPV) and Foreign Protein (HBsAg), *Process Biochemistry*, 34:295-301.

50. Ramirez, D.L. and W.E. Bentley (1999) Modeling Inducer and Amino Acid Fed-batch Cultures: Characterization of Cell Stress and Protein Turnover, *Journal of Biotechnology*, 71:39-58.

51. Hu, Y.-C., Vakharia, V., Edwards, G., and W. E. Bentley (1999) Chimeric Infectious Bursal Disease Virus-like Particles Expressed in Insect Cells and Purified by Immobilized Metal Affinity Chromatography, *Biotechnology and Bioengineering*, 63:721-729.

52. Dalal, N.G., and W. E. Bentley (1999) Mathematical Characterization of Insect Cell (Sf-9) Death in Suspended Culture, *Biotechnology Letters*, 21: 325-329.

53. Harcum, S.W., and W. E. Bentley (1999) The Heat-shock and Stringent Responses have Overlapping Protease Activity in *E. coli*: Implications for Heterologous Protein Yield, *Applied Biochemistry and Biotechnology*, 80:23-37.

54. DeLisa, M.P., Li, J.C., Rao, G., Weigand, W.A., and W.E. Bentley (1999) Monitoring GFP-operon Fusion Protein Expression During High Cell Density Cultivation of *Escherichia coli* Using an On-line Optical Sensor, *Biotechnology and Bioengineering*, 65:54-64.

55. Gill, R.T., Valdes, J.J., and W.E. Bentley (1999) RTPCR Differential Display Analysis of *Escherichia coli* Global Gene Regulation in Response to Heat Shock, *Applied and Environmental Microbiology*, 65:5386-5393.

56. Hu, Y.-C. and W.E. Bentley (1999) Enhancing Yield of Infectious Bursal Disease Virus Structural Proteins in Baculovirus Expression Systems: Focus on Media, Protease Inhibitors, and Dissolved Oxygen, *Biotechnology Progress*, 15:1065-1071.

57. Cha, H.J, Dalal, N.G., Pham, M.Q., Vakharia, V.N., Rao, G., and W. E. Bentley (1999) Insect Larval Expression Process is Optimized by Generating Fusions with Green Fluorescent Protein, *Biotechnology and Bioengineering*, 65:316-324.

58. Cha, H.J., Wu, C.-F., Valdes, J.J., Rao, G., and W. E. Bentley (2000) Observations of Green Fluorescent Protein as a Fusion Partner in Genetically Engineered *Escherichia coli*: Monitoring Protein Expression and Solubility, *Biotechnology and Bioengineering*, 67:565-574.

59. Wu, C.-F., Cha, H.J., Rao, G., Valdes, J.J., and W. E. Bentley (2000) A Green Fluorescent Protein Fusion Strategy for Monitoring the Expression, Cellular Localization, and Separation of Biologically Active Organophosphorus Hydrolase, *Applied Microbiology and Biotechnology*, 54:78-83.

60. Hu, Y.C., and W. E. Bentley (2000) A Kinetic and Statistical Thermodynamics-based Model for Baculovirus Infection and Virus-like Particle Assembly, *Chemical Engineering Science*, 55:3991-4008.

61. Chae, H.J., DeLisa, M.P., Cha, H.J., Weigand, W.A., Rao, G., and W.E. Bentley (2000) A Framework for On-line Optimization of Recombinant Protein Expression in High Cell Density *Escherichia coli* Cultures using GFP-Fusion Monitoring, *Biotechnology and Bioengineering*, 69: 275-285.

62. Gill, R.T., Valdes, J.J., and W.E. Bentley (2000) A Comparative Study of Global Stress Gene Regulation in Response to Overexpression of Recombinant Proteins in *Escherichia coli*. *Metabolic Engineering*, 2: 178-189.

63. DeLisa, M.P., Zhang, Z., Shiloach, M., Pilevar, S., Davis, C.C., Bentley, W.E., and J.S. Sirkis (2000) Evanescent Wave Long Period Fiber Bragg Grating as an Immobilized Antibody Biosensor. *Analytical Chemistry*, 72:2895-2900.

64. Gill, R.T., Shiloach, M.S., DeLisa, M.P., Holoman, T.R., and W.E. Bentley (2000) OmpT Expression and Activity Increase in Response to Recombinant Protein Chloramphenicol Acetyltransferase Overexpression and Heat Shock in *E. coli*. *Journal of Microbiology and Molecular Biotechnology*. 2:283-289.

65. Lee, T.-S. , Chan, S.H., Weigand, W.A., and W. E. Bentley (2000) Biocatalytic Transformation of [(2-Hydroxyethyl)thio]acetic Acid and Thiodiglycolic Acid from Thiodiglycol by *Alcaligenes xylosoxydans ssp. xylosoxydans* (SH91), *Biotechnology Progress*, 16:363-367.

66. Srivastava, R., Cha, H.J., Peterson, M.S., and W.E. Bentley (2000) Antisense Downregulation of σ^{32} as a Transient Metabolic Controller in *Escherichia coli*: Effects on Yield of Active Organophosphorus Hydrolase, *Applied and Environmental Microbiology*, 66: 4366-4371.

67. Madurawe, R., Chase, T., Tsao, E.I., and W.E. Bentley (2000) A Recombinant Lipoprotein Antigen Against Lyme Disease Expressed in *E. coli*: Fermentor Operating Strategies for Improved Yield. *Biotechnology Progress*, 16:571-576.

68. Li, J., Wang, S., VanDeusen, W.J., Schultz, L.D., George, H.A., Herber, W.K., Chae, H.J., Bentley, W.E., Rao, G. (2000) Green Fluorescent Protein in *Saccharomyces cerevisiae*: Real-Time Studies of the GAL1 Promoter, *Biotechnology and Bioengineering*, 70:187-196.

69. Gill, R.T., DeLisa, M.P., Valdes, J.J., and W.E. Bentley (2001) Genomic Analysis of High Cell Density Recombinant *Escherichia coli* Fermentation and "Cell Conditioning" for Improved Recombinant Protein Yield. *Biotechnology and Bioengineering*, 72: 85-95.

70. DeLisa, M.P., Gill, R.T., and W.E. Bentley (2001) "Mapping Stresses in *Escherichia coli* to Improve Yield", EFB Recombinant Protein Production, Kluwer Academic Publishers, pp. 43-54.

71. DeLisa, M.P., Valdes, J.J., and W.E. Bentley (2001) Mapping Stress-Induced Changes in Autoinducer AI-2 Production in Chemostat Cultivated *Escherichia coli* K-12, *Journal of Bacteriology*, 183:2918-2928.

72. Wu, C.F., Valdes, J.J.., Rao, G., and W.E. Bentley (2001) Enhancement of Organophosphorus Hydrolase Yield in *E. coli* Using Multiple Gene Fusions, *Biotechnology and Bioengineering*, 75:100-103.

73. Chen, T., Vazquez-Duhalt, R., Wu, C.F., Bentley, W.E., and G.F. Payne (2001) Combinatorial Screening for Enzyme-mediated Coupling. Tyrosinase-Catalyzed Coupling to Create Protein-Chitosan Conjugates, *Biomacromolecules.* 2:456-452.

74. Hu, Y.-C., and W. E. Bentley (2001) The Effect of MOI Ratio on the Composition and Yield of Chimeric Infectious Bursal Disease Virus-like Particles by Baculovirus Co-infection: Deterministic Predictions and Experimental Results, *Biotechnology and Bioengineering*, 75:104-119.

75. Srivastava, R., Peterson, M.S., and W.E. Bentley (2001) Stochastic Kinetic Analysis of the *Escherichia coli* Stress Circuit Using σ^{32} Targeted Antisense, *Biotechnology and Bioengineering*, 75:120-129.

76. Wu, C.F., Valdes, J.J. and W.E. Bentley (2001) Effects of *in situ* Cobalt Ion Addition on the Activity of a GFP-OPH Fusion Protein: The Fermentation Kinetics, *Biotechnology Progress*, 17:606-611.

77. DeLisa, M.P., Chae, H.J., Rao, G., Weigand, W.A., Valdes, J.J., and W.E. Bentley (2001) Generic Model Control of Induced Protein Expression in High Cell Density Cultivation of *Escherichia coli* Using On-line GFP-Fusion Monitoring. *Bioprocess and Biosystems Engineering*, 24:83-91.

78. Lee, T.S., Chan, S.H., Weigand, W.A., and W.E. Bentley (2001) A Metabolic Model for Thiodiglycol Degradation: Capacity Constraint Leads to Byproduct Accumulation. *Bioprocess and Biosystems Engineering*, 24:33-38.

79. Gotoh, T., Miyazaki, Y., Kikuchi, KI, and W.E. Bentley (2001) Investigation of Sequential Behavior of Carboxyl Protease and Cysteine Protease Activities in Virus-infected Sf-9 Insect Cell Culture by Inhibition Assay, *Applied Microbiology and Biotechnology*, 56:742-749.

80. Albano, C. R., Lu, Canghai, Bentley, W.E., and G. Rao (2001) High Throughput Studies of Gene Expression Using Green Fluorescent Protein-Oxidative Stress Promoter Probe Constructs: The Potential for Living Chips. *J. Biomolecular Screening*. 6:421-428.

81. DeLisa, M.P., Valdes, J.J., and W.E. Bentley (2001) Quorum Signaling via AI-2 Communicates the "Metabolic Burden" Associated with Heterologous Protein Expression in *Escherichia coli*. *Biotechnology and Bioengineering*, 75:439-450.

82. DeLisa, M.P., Wu, C.F., Wang, L., Valdes, J.J., and W.E. Bentley (2001) DNA Microarray-Based Identification of Genes Controlled by AI-2-stimulated Quorum Sensing in *Escherichia coli*. *Journal of Bacteriology*, 183:5239-5247.

83. Cho, H.S., Shin, H.S., Bentley, W.E., and H. J. Cha (2001) Partial Recovery of Cell Membrane Bounded Human Interleukin-2 Fusion Protein from Insect Cell Debris by Using Various Detergent Extractions. *Biotechnology Letters*, 23:1957-1961.

84. Gotoh, T., Miyazaki, Y., Sato, W., Kikuchi, K.-I., and Bentley, W. E. (2001) Proteolytic Activity and Recombinant Protein Production of Virus-infected Sf-9 Insect Cell Culture Supplemented with Cysteine Protease and Carboxyl Protease Inhibitors. *Journal of Bioscience and Bioengineering*, 92: 248-255.

85. Lu, C., Albano, C.R., Bentley, W.E., and G. Rao (2002) Differential Rates of Gene Expression Monitored by Green Fluorescent Protein, *Biotechnology and Bioengineering*, 79:429-37.

86. Cha, H.J., Dalal, N.G., Pham, M.-Q., Kramer, S.F., Vakharia, V.N., and W.E. Bentley (2002) Monitoring Foreign Protein Expression from Baculovirus p10 and polh Promoters in Insect Larvae, *BioTechniques*, 35:986-991.

87. Li, J., Xu, H., Bentley, W.E. and Rao, G. (2002) Impediments to Secretion of Green Fluorescent Protein and its Fusion from *Saccharomyces cerevisiae*. *Biotechnology Progress*, 18: 831-838.

88. Wu, C.F., Cha, H.J., Valdes, J.J., and W. E. Bentley (2002) GFP-Immobilized Enzymes: Degradation of Paraoxon via Organophosphorus Hydrolase in a Packed Column, *Biotechnology and Bioengineering*, 77:212-218.

89. Li, J., Xu, H., Herber, W.K., Bentley, W.E., and G. Rao (2002) Integrated Bioprocessing in *Saccharomyces cerevisiae* Using Green Fluorescent Protein as a Fusion Partner, *Biotechnology and Bioengineering*, 79:682-693.

90. Wu, Li-Qun, Gadre, A.P, Yi, Hyunmin, Kastantin, M.J., Rubloff, G.W., Bentley, W.E., Payne, G.F., and Reza Ghodssi, (2002) Voltage-dependent Assembly of the Polysaccharide Chitosan onto an Electrode Surface, *Langmuir*, 8: 8620-8625.

91. DeLisa, M.P., and W. E. Bentley (2002) Bacterial Autoinduction: Looking Outside the Cell for New Metabolic Engineering Targets, *Microbial Cell Factories*, 1:5-12.

92. Kramer, S.F., Kostov, Y., Rao, G., and W.E. Bentley (2003) *Ex Vivo* Monitoring of Protein Production in Baculovirus-Infected *Trichoplusia ni* Larvae with a GFP-Specific Optical Probe, *Biotechnology and Bioengineering*, 83:241-247.

93. Bleckwenn, N.A., Bentley, W.E., and J. Shiloach (2003) Investigating Protein Production Strategies with Recombinant Vaccinia virus, *Biotechnology Progress*, 19:130-136.

94. Wu, Li-Qun, Yi, H., Li, S., Rubloff, G.W., Bentley, W.E., Ghodssi, R., and G.F. Payne (2003), Spatially-selective Deposition of a Reactive Polysaccharide Layer onto a Patterned Template, *Langmuir*, 19:519-524.

95. Yi, H., Wu, L.Q., Sumner, J.J., Gillespie, J.B., Payne, G.F., and W.E. Bentley (2003) Chitosan Scaffolds for Biomolecular Assembly: Coupling Nucleic Acid Probes for Detecting Hybridization, *Biotechnology and Bioengineering*, 83:646-652.

96. March, J.C., Rao, G., and W.E. Bentley (2003) Biotechnological Applications of Green Fluorescent Protein, *Applied Microbiology and Biotechnology*, 62:303-315.

97. Wu, C.F., Bentley, W.E., Valdes, J.J., and J.W. Sekowski (2003) DNA microarray for discrimination between pathogenic 0157:H7 EDL933 and non-pathogenic *Escherichia coli* strains. *Biosensors and Bioelectronics*, 19:1-8.

98. Kramer, S.F., and W.E. Bentley (2003) RNA Interference as a Metabolic Engineering Tool: Potential for *in vivo* Control of Protein Expression in an Insect Larval Model, *Metabolic Engineering*, 5:183-190.

99. Fernandes, R., Wu, L.Q., Chen, T., Yi, H., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F Payne (2003) Electrochemically-Induced Deposition of a Polysaccharide Hydrogel onto a Patterned Surface. *Langmuir*, 19: 4058-4062.

100. Mohaddes-Ardabili, L., Martínez-Miranda, L.J., Silverman, J., Christou, A., Salamanca-Riba, L.G., Bentley, W.E., Ohuchi, F., and M. Al-Sheikhly (2003) Attachment of DNA probes on gallium arsenide surface. *Applied Physics Letters*, 83:192-194.

101. Lu, C., Bentley, W.E., and G. Rao (2003) Comparisons of Oxidative Stress Response Genes in Aerobic *Escherichia coli* Fermentations, *Biotechnology and Bioengineering*, 83:864-870.

102. Chen, T., Yi, H., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F. Payne (2003) Nature-inspired Creation of Protein-polysaccharide Conjugate and its Subsequent Assembly onto a Patterned Surface. *Langmuir*, 19:9382-9386.

103. Kastantin MJ, Li S, Gadre AP, Wu LQ, Bentley WE, Payne GF, Rubloff GW, Ghodssi R (2003) Integrated Fabrication of Polymeric Devices for Biological Applications, *Sensors and Materials*, 15 (6): 295-31.

104. Chen, T., Small, D.A., Wu, L.-Q., McDermott, M.K., Bentley, W.E., and G. F. Payne (2003) Enzymatic Methods for in Situ Entrapment and Cell Release, *Biomacromolecules*, 4:1558:1563.

105. Fernandes, R., Yi, H., Wu, L-Q., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F. Payne (2004) Thermo-Biolithography: A Technique for Patterning Nucleic Acids and Proteins, *Langmuir*, 20:906-913.

106. Mohaddes-Ardabili, L., Martinez-Miranda, L.J., Salamanca-Riba, LG., Christou, A., Silverman, J., Bentley, W.E., and M. Al-Sheikhly (2004) Preferred Orientation of DNA Oligonucleotide Probes on the (2x4) Reconstructed Surface of (001) GaAs, *Journal of Applied Physics*, 95:6021-6024.

107. Yi, H., Wu, L.-Q., Ghodssi, R., Rubloff, G.W., Payne, G.F., and W.E. Bentley (2004) A Robust Technique for Assembly of Nucleic Acid Hybridization Chips Based on Electrochemically Templated Chitosan, *Analytical Chemistry*, 76:365-372.

108. Cha, H.J., Dalal, N.G., and W.E. Bentley (2004) *In vivo* Monitoring of Intracellular Expression of Human Interleukin-2 using Green Fluorescent Protein Fusion Partner in *Pichia pastoris*, *Biotechnology Letters*, 26:1157-1162.

109. Tao, Y., Fishman, A., Bentley, W.E., and T. K. Wood (2004) Oxidation of Benzene to Catechol and 1,2,3-Trihydroxybenzene by Toluene 4-Monooxygenase of *Pseudomonas mendocina* KR1 and Toluene 3-Monooxygenase of *Ralstonia pickettii* PKO1, *Applied & Environmental Microbiology*, 7:3814-3820.

110. Fishman A, Tao Y, Bentley WE, and T.K. Wood (2004) Protein Engineering of Toluene 4-monooxygenase of *Pseudomonas mendocina* KR1 for Synthesizing 4-nitrocatechol from Nitrobenzene, *Biotechnology & Bioengineering*, 87(6):779-90.

111. Tao Y, Fishman A, Bentley WE, and T.K. Wood (2004) Altering Toluene 4-monooxygenase by Active-site Engineering for the Synthesis of 3-methoxycatechol, Methoxyhydroquinone, and Methylhydroquinone, *Journal of Bacteriology*, 186:4705-13.

112. Lu, C., Bentley, W.E., and G. Rao (2004) A High-Throughput Approach to Promoter Study Using Green Fluorescent Protein, *Biotechnology Progress*, 20:1634-1640.

113. March, J.C. and W.E. Bentley (2004) Quorum Sensing and Bacterial Cross-talk in Biotechnology, *Current Opinion in Biotechnology*, 15:495-502.

114. March, J.C. and W.E. Bentley (2004) Insulin stimulates dsRNA uptake in *Drosophila* S2 cells, *BioTechniques*, 37:898-890.

115. Wang, L., Hashimoto, Y., Tsao, C.-Y., Valdes, J.J., and W.E. Bentley (2005) cAMP and cAMP Receptor Protein (CRP) Influence Both Synthesis and Uptake of Extracellular Autoinducer-2 in *Escherichia coli*, *Journal of Bacteriology*, 187:2066-76.

116. Yi, H., Wu, L.Q., Rubloff, G.W., Ghodssi, R., Payne, G.F., and Bentley, W.E., (2005) Signal-Directed Sequential Assembly of Biomolecules on Patterned Surfaces. *Langmuir*, 2:2104-2107.

117. Tao, Y., Bentley, W.E., and T.K. Wood, (2005) Regiospecific Oxidation of Naphthalene and Fluorene by Toluene Monooxygenase and Engineered Toluene 4-Monooxygenase of *Pseudomonas mendocina* KR1, *Biotechnology and Bioengineering*, 90:85-94.

118. Cha, H.J., Shin, H.S., Lim, H.J., Cho, H.S., Dalal, N.N., Pham, M.Q., and W.E. Bentley (2005) Comparative Production of Human Interleukin-2 Fused with Green Fluorescent Protein in Several Recombinant Expression Systems, *Biochemical Engineering Journal*, 24:225-233.

119. Lu CH, Albano CR, Bentley WE, and G. Rao (2005) Quantitative and Kinetic Study of Oxidative Stress Regulons Using Green Fluorescent Protein, *Biotechnology and Bioengineering*, 89: 574-587.

120. Bleckwenn, N. A., Bentley, W. E., Shiloach, J., (2005) Vaccinia Virus-Based Expression of gp120 and EGFP: Survey of Mammalian Host Cell Lines, *Biotechnology Progress*, 21:186-191.

121. Bleckwenn, N. A., Bentley, W. E., Shiloach, J., (2005) Evaluation of Production Parameters with the Vaccinia Virus Expression System Using Microcarrier Attached HeLa Cells, *Biotechnology Progress*, 21:554-561.

122. Bleckwenn, N. A., Bentley, W. E., Shiloach, J., (2005) Production of Recombinant Protein Using the HeLa S3-Vaccinia Virus Expression System: Bioreactor Perfusion and Effects of Post-Infection Temperature, *Journal of Bioscience, Biotechnology and Biochemistry*, 69:1065-1072.

123. Bleckwenn, N. A., Golding, H., Bentley, W. E., Shiloach, J., (2005) Production of Recombinant Proteins by Vaccinia Virus in a Microcarrier Based Mammalian Cell Perfusion Bioreactor, *Biotechnology and Bioengineering*, 90:663-674.

124. Tao, Y, Bentley, W.E., and T.K. Wood (2005) Phenol and 2-Naphthol Production by Toluene 4-Monooxygenases Using an Aqueous/Dioctyl Phthalate system, *Applied Microbiology & Biotechnology*, 68:614-621.

125. Dalal, N.G., Bentley, W.E., and H.J. Cha (2005) Facile Monitoring of Baculovirus Infection for Foreign Protein Expression under Very Late Polyhedrin Promoter using Green Fluorescent Protein Reporter under Early-to-Late Promoter, *Biochemical Engineering Journal*, 24:27-30.

126. Cha, H.J., Dalal, N.G., and W.E. Bentley (2005) Secretion of Human Interleukin-2 Fused with Green Fluorescent Protein in Recombinant *Pichia pastoris*, *Applied Biochemistry and Biotechnology*, 126:1-11.

127. Powers, M.A., S. T. Koev, A. Schleunitz, H. Yi, V. Hodzic, W. E. Bentley, G. F. Payne, G. W. Rubloff, and R. Ghodssi (2005) Integrated Optical Sensing of Biofunctionalized Sites in BioMEMS, *Lab on a Chip*, 5:583-586.

128. Chryssis, A.N., Saini, S.S., Lee, S.M., Yi, H.M., Bentley, W.E., and M. Dagenais (2005) Detecting Hybridization of DNA by Highly Selective Evanescent Field Etched Core Fiber Bragg Grating Sensors, *IEEE Journal of Selected Topics in Quantum Electronics*, 11:864-872.

129. Chang, W., Small, D.A. Toghrol, F., and W.E. Bentley (2005) Microarray Analysis of Toxicogenomic Effects of Peracetic Acid on *Pseudomonas aeruginosa*, *Environmental Science & Technology*, 39:5893-5899.

130. Chang, W., Small, D.A., Toghrol, F., and W.E. Bentley (2005) Microarray Analysis of *Pseudomonas aeruginosa* Reveals Induction of Pyocin Genes in Response to Hydrogen Peroxide, *BMC Genomics*, 6:1-14.

131. Yi, H., Nisar, S., Lee, SY, Powers, MA, Bentley, WE., Payne, GF, Ghodssi, R., Rubloff, GW, Harris, MT, Culver, JN (2005) Patterned Assembly of Genetically Modified Viral Nanotemplates via Nucleic Acid Hybridization, *Nano Letters*, 5:1031-1936.

132. Wang, L., Li, J., March, J.C., Valdes, J.J., and W.E. Bentley (2005), *luxS*-Dependent Gene Regulation in *Escherichia coli* K-12 Revealed by Genomic Expression Profiling, *Journal of Bacteriology*, 187:8350-8360.

133. Yi, H., Wu, L.Q., Bentley, W.E., Ghodssi, R., Rubloff, G.W., Culver, J.N., Payne, G.F., (2005) Biofabrication with Chitosan, *Biomacromolecules*, 6:2881-2894.

134. Lewandowski, A.T., Small, D.A., Chen, T., Payne, G.F., and W.E. Bentley (2006) Tyrosine-based "Activatable Pro-tag": Enzyme-catalyzed Protein Capture and Release, *Biotechnology and Bioengineering*, 93:1207-1215.

135. Chang, W., Small, D.A., Toghrol, F., and W.E. Bentley (2006) Global Transcriptome Analysis of *Staphylococcus aureus* Response to Hydrogen Peroxide, *Journal of Bacteriology*, 188:1648-1659.

136. Gonzalez Barrios, A.F., Zuo R., Hashimoto, Y., Yang, L., Bentley W.E., and T.K. Wood (2006) Autoinducer 2 Controls Biofilm Formation in *Escherichia coli* Through a Novel Motility Quorum-sensing Regulator (MqsR, B3022), *Journal of Bacteriology*, 188:305-316.

137. Bleckwenn, N. A. and Bentley, W. E. (2006) Systems and Technology Involving Bacteria, In CRC BME Handbook: Tissue Engineering and Artificial Organs (JD Bronzino, ed.) CRC Press, Boca Raton, FL, 2.1-2.10.

138. Yung, C., Barbari, T.A., and W.E. Bentley (2006) Integrated Non-Invasive System for Quantifying Secreted Human Therapeutic hIL2, *Biotechnology and Bioengineering*, 95:1315-1321.

139. Yang, L., Portugal, F.H., and W.E. Bentley (2006) Conditioned Medium from *Listeria innocua* Stimulate Emergence from a Resting State not in Response to Quorum Sensing Autoinducer AI-2, *Biotechnology Progress*, 22:387-393.

140. March, J.C., and W.E. Bentley (2006) Engineering Eukaryotic Signal Transduction with RNAi: Enhancing *Drosophila* S2 Cell Growth and Recombinant Protein Synthesis via Silencing of *TSC1*. *Biotechnology and Bioengineering*, 95:645-652.

141. Park, J.J., Luo, X.L., Yi, H.M., Valentine, T.M., Payne, G.F., Bentley, W.E., Ghodssi, R., and Gary W. Rubloff (2006) Chitosan-mediated *in situ* Biomolecule Assembly in Completely Packaged Microfluidic Devices, *Lab on a Chip*, 6:1315-1321.

142. Yung, C.W., Barbari, T.A., and W.E. Bentley (2006) Counteracting Apoptosis and Necrosis with Hypoxia Responsive Expression of Bcl-2Δ, *Metabolic Engineering*, 8:483-490.

143. Cresce, A.V., Silverstein, J.S., Bentley, W.E., and P. Kofinas (2006) Nanopatterning of Recombinant Proteins using Block Copolymer Templates, *Macromolecules*, 39, 5826-5829.

144. Dalal, N.G., Cha, H.J., Kramer, S.F., Kostov, Y., Rao, G. and W.E. Bentley (2006) Rapid Non-invasive Monitoring of Baculovirus Infection for Insect Larvae Using Green Fluorescent Protein Reporter Under Early-to-Late Promoter and a GFP-Specific Optical Probe, *Process Biochemistry*, 41:947-950.

145. Li, J., Wang, L., Hashimoto, Y., Tsao, C-Y., Wood, T.K., Valdes, J.J., Zafiriou, E., and W.E. Bentley (2006) Stochastic Model of *E. coli* AI-2 Quorum Signal Circuit Reveals Alternative Synthesis Pathways, *Nature Molecular Systems Biology*, 2:67-83.

146. Chang, W, Toghrol F, and W.E. Bentley (2006) Toxicogenomic response of *Staphylococcus aureus* to peracetic acid. *Environmental Science & Technology*, 40(16):5124-31.

147. Small, D.A., Chang, W., Bentley, W.E., and F. Toghrol (2007) Toxicogenomic Analysis of Sodium Hypochlorite Antimicrobial Mechanisms in *Pseudomonas aeruginosa*, *Applied Microbiology and Biotechnology*, 74:176-185.

148. Koev, S.T., Powers, M. A., Yi, H.M., Wu, L-Q., Bentley, W.E., Rubloff, G.W., Payne, G.F., and R. Ghodssi, (2007) Mechano-transduction of DNA Hybridization and Dopamine Oxidation through Electrodeposited Chitosan Network, *Lab on a Chip, 7:103-111.*

149. March, J.C., and W.E. Bentley (2007) RNAi-based Tuning of Cell Cycling in *Drosophila* S2 cells- effects on Recombinant Protein Yield, *Applied Microbiology and Biotechnology*, 73: 1128-1135.

150. Fernandes, R., Tsao, C.Y., Hashimoto, Y., Wang, L., Wood, T.K., Payne, G.F., and W.E. Bentley (2007) Magnetic Nanofactories: Localized Synthesis and Delivery of Quorum-Sensing Signaling Molecule Autoinducer-2 to Bacterial Cell Surfaces, *Metabolic Engineering*, 9:228-239.

151. Kim, E.J., Kramer, S.F., Hebert, C.G., Valdes, J.J., and W.E. Bentley (2007) Metabolic Engineering of the Baculovirus-Expression System via Inverse "Shotgun" Genomic Analysis & RNA Interference (dsRNA) Increases Product Yield and Cell Longevity, *Biotechnology and Bioengineering*, 98:645-654.

152. Small, D.A, Chang, W., Toghrol, F., and W.E. Bentley (2007) Comparative Global Transcription Analysis of Sodium Hypochlorite, Peracetic Acid, and Hydrogen Peroxide on *Pseudomonas aeruginosa*, *Applied Microbiology and Biotechnology*, 76:1093-1105.

153. Li, J., Attila, C., Wang, L., Wood, T.K., Valdes, J.J., and W.E. Bentley (2007) Quorum Sensing in *E. coli* is Signaled by AI-2/LsrR: Effects on sRNA and Biofilm Architecture, *Journal of Bacteriology*, 189:6011-6020.

154. Lee, J., Bansal, T., Jayaraman, A., Bentley, W.E., and T.K. Wood (2007) Enterohemorrhagic *Escherichia coli* Biofilms are Inhibited by 7-Hydroxyindole and Stimulated by Isatin, *Applied and Environmental Microbiology*, 73:4100-4109.

155. O'Connell, K.P., Kovaleva, E., Campbell, J.H., Anderson, P.E., Brown, S.G., Davis, D.C., Valdes, J.J., Welch, R.W., Bentley, W.E. and N.A. van Beek (2007) Production of a Recombinant Antibody Fragment in Whole Insect Larvae, *Molecular Biotechnology*, 36:44-51.

156. Yung, C.W., Tullman, J.A., Payne, G.F., Bentley, W.E., and T.A. Barbari (2007) Transglutaminase Crosslinked Gelatin as a Tissue Engineering Scaffold, *Journal of Biomedical Materials Research A*, 83:1039-1046.

157. Saini, S.S., Stanford, C., Lee, S.M., Park, J., DeShong, P., Bentley, W.E., and M. Dagenais (2007) Monolayer Detection of Biochemical Agents Using Etched-Core Fiber Bragg Grating Sensors, *IEEE Photonics Technology Letters*, 19:1341-1343.

158. March, J.C., and W.E. Bentley (2007) Methods for gene silencing with RNAi, *Methods in Molecular Biology*, 388:424-434.

159. Hu, Y.C., and W.E. Bentley (2007) Alternative Bioreactor Strategy for Probing Infection and Production, *Methods in Molecular Biology*, 388:419-426.

160. Cha, H.J., and W.E. Bentley (2007) Monitoring and Visualization of Baculovirus Infection Using Green Fluorescent Protein Strategy, *Methods in Molecular Biology*, 388:407-418.

161. Chang MW , Toghrol F, and W.E. Bentley (2007) Toxicogenomic response to chlorination includes induction of major virulence genes in *Staphylococcus aureus*. *Environmental Science and Technology*, 41:7570-7575.

162. Luo, X.L., Lewandowski, A.T., Yi, H.M., Payne, G.F., Ghodssi, R., Bentley, W.E., and G.W. Rubloff (2008). Programmable Assembly of a Metabolic Pathway Enzyme in a Pre-packaged Reusable BioMEMS Device. *Lab on a Chip*, 8:420-430.

163. Shi, X.W., Liu, Y., Lewandowski, A.T., Wu, L.Q., Wu, H.C., Ghodssi, R., Rubloff, G.W., Bentley, W.E., and G.F. Payne, (2008) Chitosan Biotinylation and Electrodeposition for Selective Protein Assembly, *Macromolecular Bioscience*, 8(5):451-457.

164. Shi, X.W., Wu, H.C., Liu, Y., Tsao, C.Y., Wang, K., Kobatake, E., Bentley, W.E., and G.F. Payne (2008) Chitosan fibers: Versatile platform for nickel-mediated protein assembly, *Biomacromolecules*, 9(5):1417-1423.

165. Jang, H.J., Chang, M.W., Toghrol, F., and W.E. Bentley (2008) Microarray analysis of toxicogenomic effects of triclosan on *Staphylococcus aureus*, *Applied Microbiology and Biotechnology*, 78 (4):695-707.

166. Hung, C.W., Holoman, T.R.P., Kofinas, P., and W.E. Bentley (2008) Towards oriented assembly of proteins onto magnetic nanoparticles, *Biochemical Engineering Journal*, 38(2):164-170.

167. Lewandowski, A.T., Yi, H., Luo, X., Payne, G.F., Ghodssi, R., Rubloff, G.W., and W.E. Bentley (2008) Protein Assembly onto Patterned Microfabricated Devices through Enzymatic Activation of Fusion Pro-tag. *Biotechnology and Bioengineering*, 49:1039-1046.

168. Lewandowski, A.T., Yi, H.M., Payne, G.F., Ghodssi, R., Rubloff, G.W., and W.E. Bentley (2008) Towards Area-Based *In vitro* Metabolic Engineering: Assembly of Pfs Enzyme onto Patterned Microfabricated Chips, *Biotechnology Progress*, 24(5):1042-1051.

169. Hebert, C., Valdes, J.J., and W.E. Bentley (2008) Beyond silencing - engineering applications of RNA interference and antisense technology for altering cellular phenotype, *Current Opinion in Biotechnology*, 19(5); 500-505.

170. Hooshangi, S., and W.E. Bentley (2008) From unicellular properties to multicellular behavior: bacteria quorum sensing circuitry and applications, *Current Opinion in Biotechnology*, 19(6):550-555.

171. Nde, C.W., Jang, H.J., Toghrol, F., and W.E. Bentley (2008) Toxicogenomic response of *Pseudomonas aeruginosa* to ortho-phenylphenol, *BMC Genomics*, 9:473.

172. Lee, J., Zhang, X.S., Hegde, M., Bentley, W.E., Jayaraman, A., and T.K. Wood (2008) Indole cell signaling occurs primarily at low temperatures in *Escherichia coli*, *ISME Journal*, 2(10):1007-1023.

173. Jang, H.J., Nde, C.W., Toghrol, F., and W.E. Bentley (2008) Microarray analysis of toxicogenomic effects of Ortho-phenylphenol in *Staphylococcus aureus*, *BMC Genomics*, 9:411.

174. Luo, X., Berlin, D.L., Buckhout-White, S., Bentley, W.E., Payne, G.F., Ghodssi, R., and G.W. Rubloff (2008) Design optimization for bioMEMS studies of enzyme-controlled metabolic pathways, *Biomedical Microdevices*, 10(6):899-908.

175. Fang, X., Bentley, W.E., and E. Zafiriou (2008) Stochastic modeling of gene positive autoregulation networks involving signal molecules, *Biophysical Journal*, 95(7):3137-3145.

176. Cresce, A.V., Culver, J.N, Bentley, W.E. and P. Kofinas (2009) Block copolymer nanotemplating of tobacco mosaic and tobacco necrosis viruses, *Acta Biomaterials*, 5:893-902.

177. Fernandes, R., and W.E. Bentley (2009) AI-2 biosynthesis module in a magnetic nanofactory alters bacterial response via localized synthesis and delivery. *Biotechnology and Bioengineering*, 102(2): 390-399.

178. Hebert, C.G., Valdes, J.J., and W.E. Bentley (2009) Investigating apoptosis: Characterization and analysis of Trichoplusia ni-caspase-1 through overexpression and RNAi mediated silencing, *Insect Biochemistry and Molecular Biology*, 39: 113-124.

179. Yang, X.H., Shi, X.W., Liu, Y., Bentley, W.E., and G.F. Payne (2009) Orthogonal Enzymatic Reactions for the Assembly of Proteins at Electrode Addresses, *Langmuir*, 25:338-344.

180. Garcia, J.R., Cha, H.J., Rao, G., Marten, M.R., and W.E. Bentley (2009) Microbial nar-GFP Cell Sensors Reveal Oxygen Limitations in Highly Agitated and Aerated Laboratory-Scale Fermentors, *Microbial Cell Factories*, 8: 6-10.

181. Wu, H.C., Shi, X.W., Tsao, C.Y., Lewandowski, A., Fernandes, R., Hung, C.W., Deshong, P., Kobatake, E., Valdes, J.J., Payne, G.F., and W.E. Bentley (2009) Biofabrication of antibodies and antigens via IgG-binding domain engineered with activatable pentatyrosine pro-tag, *Biotechnology and Bioengineering*, 103(2): 231-240.

182. Byrd, CM and W.E. Bentley (2009) Quieting cross talk – the quorum sensing regulator LsrR as a possible target for fighting bacterial infections, *Cell Research*, 19(11): 1229-1230.

183. Jang H.J., Nde, C., Toghrol, F., and W. E. Bentley (2009) Global transcriptome analysis of the *Mycobacterium bovis* BCG response to sodium hypochlorite, *Applied Microbiology and Biotechnology*, 85: 127-140.

184. Hebert, C.G., Valdes, J.J., and W.E. Bentley (2009) *In vitro* and *in vivo* RNA interference mediated suppression of Tn caspase-1 for improving recombinant protein production in High Five cell culture with the baculovirus expression vector system, *Biotechnology and Bioengineering*, 104: 390-399.

185. Meyer, W.L., Liu, Y., Shi, X.W., Yang, X., Bentley, W.E., and G.F. Payne (2009) Chitosan-coated wires: conferring electrical properties to chitosan fibers, *Biomacromolecules*, 10:858-864.

186. Nde, C.W., Jang, H.J., Toghrol, F., and W.E. Bentley (2009) Global transcriptomic response of *Pseudomonas aeruginosa* to chlorhexidine diacetate, *Environmental Science & Technology*, 43(21): 8406-8415.

187. Jang, H.J., Nde, C., Toghrol, F., and W.E. Bentley (2009) Toxicogenomic response of *Mycobacterium bovis* to hydrogen peroxide, *Molecular & Cellular Toxicology*, 5(3): 61-71.

188. Jang, H.J., Nde, C., Toghrol, F., and W.E. Bentley (2009) Microarray Analysis of *Mycobacterium bovis* BSG Revealed Induction of Iron Acquisition Related Genes in Response to Hydrogen Peroxide, *Environmental Science & Technology*, 43(24): 9465-9472.

189. Shi, X.W., Tsao, C.Y., Yang, X.H., Liu, Y., Dykstra, P., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F. Payne (2009) Electroaddressing of Cell Populations by Co-Deposition with Calcium Alginate Hydrogels, *Advanced Functional Materials*, 19(13): 2074-2080.

190. Shi, X.W., Yang, X.H., Gaskell, K.J., Liu, Y., Kobatake, E., Bentley, W.E., and G.F. Payne (2009) Reagentless Protein Assembly Triggered by Localized Electrical Signals, *Advanced Materials*, 21(9): 984-988.

191. Bentley, W.E. (2009) Introduction, *Biotechnology and Bioengineering*, 102(5): 1283-1283 (invited introduction to reprinting of "vintage" paper – *Biotechnol. Bioeng*. 35(7):668-681.

192. Luo X., Berlin, D.L., Betz, J., Payne, G.F., Bentley, W.E., and G.W. Rubloff (2009) *In situ* generation of pH gradients in microfluidic devices for biofabrication of freestanding, semi-permeable chitosan membranes, *Lab on a Chip*, 10(1): 59-65.

193. Koev, S.T., Fernandes, R., Bentley, W.E., and R. Ghodssi (2009) A cantilever sensor with integrated optical readout for detection of enzymatically produced homocysteine, *IEEE Transactions on Biomedical Circuits and Systems* 3(6): 415-423.

194. Tsao, C.Y., Hooshangi, S., Wu, H.C., Valdes, J.J., and W.E. Bentley (2010) Autonomous Induction of Recombinant Proteins by Minimally Rewiring Native Quorum Sensing Regulon of *E. coli*, *Metabolic Engineering*, 12(3):291-297.

195. Fernandes, R., Roy, V., Wu, H.C., and W.E. Bentley (2010) Engineered biological nanofactories trigger quorum sensing response in targeted bacteria, *Nature Nanotechnology*, 5(3)213-217.

196. Fernandes R., Luo, X., Tsao, C.-Y., Payne, G.F., Ghodssi, R., Rubloff, G.W., and W.E. Bentley (2010) Biological Nanofactories Facilitate Spatially Selective Capture and Manipulation of Quorum-Sensing Bacteria in a BioMEMS Device, *Lab on a Chip*, 10(9):1128-1134.

197. Roy, V., Fernandes, R., Tsao, C.Y., and W.E. Bentley (2010) Cross Species Quorum Quenching Using A Native AI-2 Processing Enzyme, *ACS Chemical Biology*, 5(2):223-232.

198. Koev, S.T., Bentley, W.E., Ghodssi, R (2010) Interferometric readout of multiple cantilever sensors in liquid samples, *Sensors and Actuators B – Chemical*, 146(1):245-252.

199. Yang, X.H., Kim, E., Liu, T., Shi, X.W., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F. Payne (2010) In-film Bioprocessing and Immunoanalysis with Electroaddressable Stimuli-Responsive Polysaccharides, *Advanced Functional Materials*, 20(10):1645-1652.

200. Liu, Y., Kim, E., Ghodssi, R., Rubloff, G.W., Culver, J.N., Bentley, W.E., and G.F. Payne (2010) Biofabrication to Build the Biology-Device Interface, *Biofabrication*, 2(2):220.

201. Kim, E., Liu, Y., Shi, X.W., Yang, X., Bentley, W.E., and G.F. Payne (2010) Biomimetic Approach to Confer Redox Activity to Thin Chitosan Films, *Advanced Functional Materials*, 20(16): 2683-2694.

202. Roy, V., Smith, J.A., Wang, J., Stewart, J.E., Bentley, W.E., and H.O. Sintim (2010) Synthetic Analogs Tailor AI-2 Signaling Across Bacterial Species, *Journal of the American Chemical Society*, 132(32):11141-11150.

203. Bauer, R.I., Luo, X., and W.E. Bentley (2010) Chips & Tips: Customizable PDMS Chamber for Cell Imaging, *Lab on a Chip*. (peer-reviewed on-line supplement to journal).

204. Hebert, C., Gupta, A., Tsao, C-Y., Valdes, J.J., and W.E. Bentley (2010) Biological Nanofactories target and Activate Epithelial Cell Surfaces for Modulating Bacterial Quroum Sensing and Interspecies Signaling, *ACS Nano*, 4(11): 6923-6931.

205. Koev, S.T., Dykstra, P.H., Luo, X., Rubloff, G.W., Bentley, W.E., Payne, G.F., and R. Ghodssi (2010) Chitosan: an Integrative Biomaterial for Lab-on-a-chip Devices, *Lab on a Chip*, 10(22):3026-3042.

206. Yung, C.W., Bentley, W.E., and T.A. Barbari (2010) Diffusion of Interleukin-2 from Cells Overlaid with Cytocompatible Enzyme-Crosslinked Gelatin Hydrogels, *Journal of Biomedical Materials Research Part A*, 95(1):25-32.

207. Cheng, Y., Luo, X.L., Betz, J., Buckhout-White, S., Bekdash, O., Payne, G.F., Bentley, W.E., and G.W. Rubloff (2010) *In situ* Quantitative Visualization and Characterization of Chitosan Electrodeposition with Paired Sidewall Electrodes, *Soft Matter*, 6(14): 3177-3183.

208. Cheng, Y., Luo, X., Betz, J., Payne, G.F., Bentley, W.E., and G.W. Rubloff (2011) Mechanism of Anodic Electrodeposition of Calcium Alginate, *Soft Matter*, 7(12), 5677-5684.

209. Gray, K.M., Kim, E., Wu. L-Q., Liu, Y., Bentley, W.E., and G.F. Payne (2011) Biomimetic Fabrication of Information-Rich Phenolic-Chitosan Films, *Soft Matter*, 7(20):9601-9615.

210. Kim, E., Liu, Y., Baker, C.J., Owens, R., Xiao, S., Bentley, W.E., and G.F. Payne (2011) Redox-cycling and H(2)O(2) Generation by Fabricated Catecholic Films in the Absence of Enzymes, *Biomacromolecules*, 12(4):880-888.

211. Wu, L.Q., Bentley, W.E., and G.F. Payne (2011) Biofabrication with biopolymers and enzymes: Potential for constructing scaffolds from soft matter, *International Journal of Artificial Organs*, (E-Pub).

212. Liu, Y., Shi, X.W., Kim, E., Robinson, L.M., Nye, C.K., Ghodssi, R., Rubloff, G.W., Bentley, W.E., and G.F. Payne (2011) Chitosan to Electroaddress Biological Components in Lab-on-a-Chip Devices, *Carbohydrate Polymers*, 84(2):704-708.

213. Tsao, C.Y., Wang, L., Hashimoto, Y., Yi, H., March, J.C., Delisa, M.P., Wood, T.K., Valdes, J.J., and W.E. Bentley (2011) LuxS Co-expression Enhances Yield of Recombinant Proteins in *E. coli* in part through Post-transciptional control of GroEL. *Applied and Environmental Microbiology*, 77(6):2141-2152.

214. Nde, C.W., Toghrol, F., Jang, H.J., and W.E. Bentley (2010) Toxicogenomic Response of *Mycobacterium bovis* BCG to Peracetic Acid and a Comparative Analysis of the *M. Bovis* BSG Response to Three Oxidative Disinfectants, *Applied Microbiology and Biotechnology*, 90(1):277-304.

215. Meyer, M.T., Roy, V., Bentley, W.E., and R. Ghodssi (2011) Development and Validation of a Microfluidic Reactor for Biofilm Monitoring via Optical Methods, *Journal of Micromechanics and Microengineering*, 21(5) (#054023).

216. Liu, Y., Kim, E., Ulijn, R.V., Bentley, W.E., and G.F. Payne (2011) Reversible Electroaddressing of Self-assembling Amino-Acid Conjugates, *Advanced Functional Materials*, 21(9):1575-1580.

217. Liu, Y., Yi, C., Wu, H.C., Kim, E., Ulijn, R.V., Rubloff, G.W., Bentley, W.E., and G.F. Payne (2011) Electroaddressing Agarose Using Fmoc-Phenylalanine as a Temporary Scaffold, *Langmuir*, 27(12):7380-7384.

218. Roy, V., Adams, B.L., and W.E. Bentley (2011) Developing Next Generation Antimicrobials by Intercepting AI-2 Mediated Quorum Sensing, *Enzyme and Microbial Technology*, 49(2): 113-123.

219. Dykstra, P.H., Roy, V., Byrd, C., Bentley, W.E., and R. Ghodssi (2011) Microfluidic Electrochemical Sensor Array for Characterizing Protein Interactions with Various Functionalized Surfaces, *Analytical Chemistry*, 83(15):5920-5927.

220. Wang, Y.F., Liu, Y., Cheng, Y., Kim, E., Rubloff, G.W., Bentley, W.E., and G.F. Payne. 2011. Coupling Electrodeposition with Layer-by-Layer Assembly to Address Proteins within Microfluidic Channels. *Advanced Materials*, 23(48): 5817-5821.

221. Hooshangi, S., and W.E. Bentley (2011) LsrR Quorum Sensing "Switch" is Revealed by a Bottom-up Approach, *PLoS Computational Biology*, 7(9) DOI:e1002172.

222. Kamaraju, K., Smith, J., Wang, J., Roy, V., Sintim, H.O., Bentley, W.E., and S. Sukharev (2011) Effects on Membrane Lateral Pressure Suggest Permeation Mechanisms for Bacterial Quorum Sensing Molecules, *Biochemistry*, 50(32):6983-93.

223. Cheng, Y., Luo, X., Tsao, C.-Y., Wu, H.C., Betz, J., Payne, G.F., Bentley, W.E., and G.W. Rubloff (2011) Biocompatible multi-address 3D Cell Assembly in Microfluidic Devices Using Spatially Programmable Gel Formation, *Lab on a Chip*, 11(14):2316-2318.

224. Luo, X.L., Buckhout-White, S., Bentley, W.E., and G.W. Rubloff (2011) Biofabrication of Chitosan-Silver Composite SERS Substrates Enabling Quantification of Adenine by a Spectroscopic Shift, *Biofabrication*, 3(3):034108.

225. Carter, K.K., Valdes, J.J., and W.E. Bentley (2012) Pathway Engineering via Quorum Sensing and sRNA Riboregulators – Interconnected Networks and Controllers, *Metabolic Engineering*, 14(3): 281-288.

226. Terrell, J.L., Gordonov, T., Cheng, Y., Wu, H.C., Sampey, D., Luo, X., Tsao, C.Y., Ghodssi, R., Rubloff, G.W., Payne, G.F., and W.E. Bentley (2012) Integrated Biofabrication for Electro-Addressed In-Film Bioprocessing, *Biotechnology Journal*, 7(3):428-439.

227. Cheng, Y., Tsao, C.-Y., Wu, H.-C., Luo, X.L., Terrell, J.L., Betz, J., Payne, G.F., Bentley, W.E., and G.W. Rubloff (2012) Electroaddressing Functionalized Polysaccharides as Model Biofilms for Interrogating Cell Signaling, *Advanced Functional Materials*, 22(3):519-528.

228. Liu, Y., Terrell, J.L., Tsao, C.-Y., Wu, H.C., Jawaji, V., Kim, E., Cheng, Y., Wang, Y.F., Ulijn, R.V., Raghavan, S.R., Rubloff, G.W., Bentley, W.E., and G.F. Payne (2012) Biofabricating Multifunctional Soft Matter with Enzymes and Stimuli-Responsive Materials, *Advanced Functional Materials*, 22(14):3004-3012.

229. Luo, X.L., Wu, H.C., Tsao, C.-Y., Cheng, Y., Betz, J., Payne, G.F., Rubloff, G.W., and W.E. Bentley (2012) Biofabrication of Stratified Biofilm Mimics for Observation and Control of Bacterial Signaling, *Biomaterials*, 33(20): 5136-5143.

230. Gamby, S., Roy, V., Guo, M., Smith, J.A.I., Wang, J.X., Stewart, J.E., Wang, X., Bentley, W.E., and H.O. Sintim (2012) Altering the Communication Networks of Multispecies Microbial Systems Using a Diverse Toolbox of AI-2 Analogues, *ACS Chemical Biology*, 7(6):1023-1030.

231. Kim, E., Liu, Y., Bentley, W.E., and G.F. Payne (2012) Redox Capacitor to Establish Bio-Device Redox-Connectivity, *Advanced Functional Materials*, 22(7):1409-1416.

232. Gray, K. M., B. D. Liba, Y. Wang, Y. Cheng, G. W. Rubloff, W. E. Bentley, A. Montembault, I. Royaud, L. David, G. F. Payne (2012) Electrodeposition of a Biopolymeric Hydrogel: Potential for One-step Protein Electroaddressing. *Biomacromolecules*, 13(4), 1181-1189.

233. Gordonov, T., Liba, B., Terrell, J.L., Cheng, Y., Luo, X., Payne, G.F. and W.E. Bentley (2012) Bridging the Bio-electronic Interface with Biofabrication, *Journal of Visualized Experiments*, (64), e4231, doi:10.379/4321.

234. Gupta, A., Terrell, J.L., Fernandes, R., Dowling, M.B., Payne, G.F., Raghavan, S.R., and W.E. Bentley (2013) Encapsulated Fusion Protein Confers "Sense and Respond" Activity to Chitosan-Alginate Capsules to Manipulate Bacterial Quorum Sensing. *Biotechnology and Bioengineering*, 110, 552-562.

235. Liu, Y., V. Javvaji, S. R. Raghavan, W. E. Bentley, G. F. Payne (2012) Glucose Oxidase Mediated Gelation: A Simple Test to Detect Glucose in Food Products. *Journal of Agricultural and Food Chemistry*, 60(36):8963-8967.

236. Cheng, Y., Luo, X.L., Payne, G.F., Bentley, W.E., and G.W. Rubloff (2012) Biofabrication: Programmable Assembly of polysaccharide hydrogels in microfluidics as biocompatible scaffolds. *Journal of Materials Chemistry* 22(16), 7659-7666.

237. Kim, Y.W., Sardari, S.E., Meyer, M.T., Iliadis, A.A., Wu, H.C., Bentley, W.E., and R. Ghodssi (2012) An ALD Aluminum Oxide Passivated Surface Acoustic Wave Sensor for Early Biofilm Detection. *Sensors and Actuators B* 163:136-145.

238. Quan, D., W.E. Bentley (2012) Gene Network Homology in Prokaryotes Using a Similarity Search Approach: Queries of Quorum Sensing Signal Transduction. *PLoS Computational Biology*. 8(8): E1002637.

239. Ben-Yoav, H., Dykstra, P.H., Bentley, W.E., and R. Ghodssi. (2012) A Microfluidic-based Electrochemical Biochip for Label-free Diffusion-restricted DNA Hybridization Analysis. *Biosensors and Bioelectronics*, 38(1):114-120.

240. Roy, V., Meyer, M.T., Smith, J.A., Gamby, S., Sintim, H.O., Ghodssi, R., and W.E. Bentley (2012) AI-2 Analogs and Antibiotics: A Synergistic Approach to Reduce Bacterial Biofilms. *Applied Microbiology and Biotechnology*, 97(6):2627-2638. (10.1007/s00253-012-4404-6).

241. Tsao, C.-Y., Quan, D.Q. and W.E. Bentley (2012) Development of the Quorum Sensing Biotechnological Toolbox. *Current Opinion in Chemical Engineering*, DOI: 10.1016/j.coche.2012.09.008.

242. Liu, Y., J. L. Terrell, C.-Y. Tsao, H.-C. Wu, V. Javvaji, E. Kim, Y. Cheng, Y. Wang, R. V. Ulijn, S. R. Raghavan, G. W. Rubloff, W. E. Bentley, G. F. Payne. 2012. Biofabricating Multi-functional Soft Matter with Enzymes and Stimuli-Responsive Materials. *Advanced Functional Materials*, 22(14): 3004-3012. doi: 10.1371/journal.pcbi.1002637.

243. Payne, G.F., Kim, E., Cheng, Y., Wu, H-C., Ghodssi, R., Rubloff, G.W., Raghavan, S.R., Culver, J.N, and W.E. Bentley (2013) Accessing Biology's Toolbox for the Mesoscale Biofabrication of Soft Matter, *Soft Matter*, doi:10.1039/c3sm50527h.

244. Bacalocostantis, I., Mane, V.P., Goodley, A.S., Bentley, W.E., Muro, S., and P. Kofinas (2013) Investigating Polymer Thiolation in Gene Delivery, *J. Biomaterials Science and Polymer Ed*, 24(8):912-926.

245. Betz, J.F., Cheng, Y., Tsao, C.-Y., Zargar, A., Luo, X, Payne, G.F., Bentley, W.E., and G.W. Rubloff (2013) Optically Clear Alginate Hydrogels for Spatially Controlled Cell Entrapment and Culture at Microfluidic Electrode Surfaces. *Lab on a Chip*, 13(10): 1854-1858.

246. Kim, E., Gordonov, T., Bentley, W. E., and G.F. Payne (2013) Amplified and in situ detection of redox-active metabolite using a biobased redox capacitor, *Analytical Chemistry 85(4):* 2102-2108.

247. Kim, E., Gordonov, T., Liu, Y., Bentley, W. E., and G. F. Payne (2013) Reverse engineering to suggest biologically relevant redox activities of phenolic materials, *ACS Chemical Biology 8*, 716-724.

248. Liba, B. D., Kim, E., Martin, A. N., Liu, Y., Bentley, W. E., and G.F. Payne (2013) Biofabricated film with enzymatic and redox-capacitor functionalities to harvest and store electrons, *Biofabrication* 5, 015008. doi:10.1088/1758-5082/5/1/015008

249. Liu, Y., B. Zhang, K. M. Gray, Y. Cheng, E. Kim, G. W. Rubloff, W. E. Bentley, Q. Wang, G. F. Payne (2013) Electrodeposition of a Weak Polyelectrolyte Hydrogel: Remarkable Effects of Salt on Kinetics, Structure and Properties. *Soft Matter*, 9: 2703-2710.

250. Payne, G.F., E. Kim, Y. Cheng, H-C. Wu, R. Ghodssi, G.W. Rubloff, S.R. Raghavan, J.N. Culver, and W.E. Bentley. 2013. Accessing Biology's Toolbox for the Mesoscale Biofabrication of Soft Matter. *Soft Matter*, **9** (26): 6019-6032.

251. Wu, H.-C., Hebert, C.G., Hung, C.-W., Quan, D.N., Carter, K.K., and W.E. Bentley (2013) Tuning Cell Cycle of Insect Cells for Enhanced Protein Production. *Journal of Biotechnology*, 168(1): 55-61.

252. Wu, H. C., Tsao, C. Y., Quan, D. N., Cheng, Y., Servinsky, M. D., Carter, K. K., Jee, K. J., Terrell, J. L., Zargar, A., Rubloff, G. W., Payne, G. F., Valdes, J. J., and W.E. Bentley (2013) Autonomous bacterial localization and gene expression based on nearby cell receptor density, *Molecular Systems Biology 9*, 636, 1-8. doi:10.1038/msb.2012.71

253. Bentley, W.E., and G.F. Payne (2013) Nature's Other Self-Assemblers, *Science*, 341(6142): 136-137.

254. Liu, Y., Kim, E., Lee, M.E., Zhang, B., Elabd, Y.A., Wang, Q., White, I.M., Bentley, W.E., and G.F. Payne (2014) Enzymatic Writing to Soft Films: Potential to Filter, Store, and Analyze Biologically Relevant Chemical Information, *Advanced Functional Materials*, 24(4):480-491, DOI, 10.1002/adfm.201301434.

255. Bentley, W.E., Zargar, A., and G.F. Payne (2013) Plug and Play? Interconnected Multifunctional Chips for Enhancing Efficacy of Biopharmaceutical R&D, *Pharmaceutical Bioprocessing*, 1(3): 225-228.

256. Adams, B.L., Carter, K.K., Guo, M., Wu, H.-C., Tsao, C.-Y., Sintim, H.O., J.J. Valdes, and W.E. Bentley (2014) Evolved Quorum Sensing Regulator, LsrR, for Altered Switching Functions, *ACS Synthetic Biology*, 3(4): 210-219. (PMID 24111753).

257. Ha, J.-H., Eo, Y., Grishaev, A., Guo, M., Smith, J., Sintim, H.O., Kim, E.-H., Cheong, H.-K., Bentley, W.E. and K.-S., Ryu (2013) Crystal Structures of the LsrR Proteins Complexed with Phospho-AI-2 and Two Signal-Interrupting Analogs Reveal Distinct Mechanisms for Ligand Recognition, *Journal of the American Chemical Society*, 135(41):15526-35.

258. Kim, E., Leverage, W., Liu, Y., White, I.M., Bentley, W.E., and G.F. Payne. (2014) Redox-Capacitor to Connect Electrochemistry to Redox-Biology, *Analyst*, 139(1):32-43. DOI: 10.1039/c3an01632c.

259. Yan, K., Ding, F., Bentley, W.E., Deng, H.B., Du, Y.M., Payne, G.F., and X.W. Shi. (2014) Coding for Hydrogel Organization through Signal Guided Self-assembly, *Soft Matter*, 10(3):465-469. DOI: 10.1039/c3sm52405a.

260. Luo, X., Wu, H.-C., Betz, J., Rubloff, G.W., and W.E. Bentley. (2014) Air Bubble-initiated Biofabrication of Freestanding, Semi-permeable Biopolymer Membranes in PDMS Microfluidics, *Biochemical Engineering Journal*, 89:2-9.

261. Xiong, Y., Yan, K., Bentley, W.E., Deng, H.B., Du, Y.M., Payne, G.F., and X.W. Shi. (2014) Compartmentalized Multilayer Hydrogel Formation Using a Stimulus-Responsive Self-Assembling Polysaccharide, *ACS Applied Materials & Interfaces*, 6(4):2955-2964. DOI: 10.1021/am405544r.

262. Kim, E., Liu, Y., Leverage, W.T., Yin, J.J., White, I.M., Bentley, W.E., and G.F. Payne (2014) Context-Dependent Redox Properties of Natural Phenolic Materials, *Biomacromolecules*, 15(5):1653-1662. DOI: 10.1021/bm500026x.

263. Liu, Y., Kim, E., White, I.M., Bentley, W.E., and G.F. Payne (2014) Information Processing Through a Bio-Based Redox-Capacitor: Signatures for Redox Cycling, *Bioelectrochemistry*, 98:94-102. DOI:10-1016/j.bioelechem.2014. 03.012.

264. Kim, E., Xiong, Y., Cheng, Y., Wu, H.-C., Liu, Y., Morrow, B.H., Ben-Yoav, H., Ghodssi, R., Rubloff, G.W., Shen, J., Bentley, W.E., Shi, X., and G.F. Payne (2015) Chitosan to Connect Biology to Electronics: Fabricating the Bio-Device Interface and Communicating Across This Interface, *Polymers*, 7(1):1-46.

265. Ben-Yoav, H., Dykstra, P.H., Gordonov, T., Bentley, W.E., and R. Ghodssi (2014) A Microfluidic-based Electrochemical Biochip for Label-free DNA Hybridization Analysis, *Journal of Visualized Experiments*, 91: e51797, DOI:10.379/51797.

266. Bentley, W.E., Payne, G.F., and W. Chen. (2014) Biofabrication – Enlisting Nature's Components and Designs for Assembly, *Biochemical Engineering Journal*, 89:1, 1.

267. Lentini, R., Santero, S.P., Chizzolini, F., Cecchi, D., Fontana, J., Marchioretto, M., Del Bianco, C., Terrell, J.L., Spencer, A.C., Martini, L., Forlin, M., Assfalg, M., Dalla Serra, M., Bentley, W.E. and S.S. Mansy (2014) Integrating Artificial with Natural Cells to Translate Chemical Messages that Direct *E. coli* Behavior, *Nature Communications*, 5:4012, doi: 10.1038/ncomms5012.

268. Gordonov, T., Kim, E., Cheng, Y., Ben-Yoav, H., Ghodssi, R., Rubloff, G.W., Yin, J.J., Payne, G.F., and W.E. Bentley (2014) Electronic Modulation of Biochemical Signal Generation, *Nature Nanotechnology*, 9(8):605-10.

269. Ben-Yoav, H., Dykstra, P.H., Bentley, W.E., and R. Ghodssi. (2015) A Controlled Microfluidic Electrochemical Lab-on-a-Chip for Label-free Diffusion-restricted DNA Hybridization Analysis, *Biosensors & Bioelectronics*, 64:579-585. DOI:10.1016/j.bios.2014.09.069.

270. Lee, M.E., Kim, E., Liu, Y., March, J.C., Bentley, W.E., and G.F. Payne (2015) Rapid and Repeatable Redox Cycling of an Insoluble Dietary Antioxidant: Electrochemical Analysis, *Journal of Agricultural and Food Chemistry*, 62(40):9760-9768, DOI: 10.1021/jf503479d.

271. Guo, M., Zheng, Y., Terrell, J.L., Ad, M., Opoku-Temeng, C., Bentley, W.E. and H.O. Sintim (2015) Geminal Dihalogen Isosteric Replacement in Hydrated AI-2 Affords Potent Quorum Sensing Modulators, *Chemical Communications* (Camb), 51(13):2617-20. DOI: 10.1039/c4ccD9361e.

272. Li, Y., Liu, Y., Gao, T., Zhang, B., Song, Y., Terrell, J.L., Barber, N., Bentley, W.E., Takeuchi, I., Payne, G.F., and Q. Wang (2015) Self-assembly with Orthogonal-imposed Stimuli to Impart Structure and Confer Magnetic Function to Electrodeposited Hydrogels, *ACS Applied Materials & Interfaces*, 7(19):10587-10598.

273. Zargar, A., Quan, D.Q., Carter, K.K., Guo, M., Sintim, H.O., Payne, G.F., and W.E. Bentley (2015) Bacterial Secretions of Nonpathogenic *Escherichia coli* Elicit Inflammatory Pathways: a Closer Investigation of Interkingdom Signaling, *mBio*, DOI:10.1128/mBio.00025-15.

274. Luo, X., Tsao, C.-Y., Wu, H.-C., Quan, D.N., Payne, G.F., Rubloff, G.W., and W.E. Bentley (2015) Distal Modulation of Bacterial Cell-Cell Signalling in a Synthetic Ecosystem using Partitioned Microfluidics, *Lab-on-a-Chip*, 15(5):1842-1851, DOI: 10.1.1039/c51c00107b.

275. Zargar, A., Quan, D.N., Emamian, M., Tsao, C.-Y., Wu, H.-C., Virgile, C.R., and W.E. Bentley (2015) Rational Design of 'Controller Cells' to Manipulate Protein and Phenotype Expression, *Metabolic Engineering*, 30:61-68. DOI:10.1016/j.ymben.2015.04.001.

276. Servinsky, M.D., Terrell, J.L., Tsao, C.-Y., Wu, H.-C., Quan, D.N., Zargar, A., Allen, P.C., Byrd, C.M., Sund, C.J. and W.E. Bentley (2015) Directed Assembly of a Bacterial Quorum, *ISME Journal*, DOI:10.1038/ismej.2015.89.

277. Zargar, A., Payne, G.F., and W.E. Bentley (2015) A 'Bioproduction Breadboard': Programming, Assembling, and Actuating Cellular Networks, *Current Opinion in Biotechnology*, 36:154-160, DOI:10.1016/j.copbio.2015.08.017.

278. Terrell J.L., Wu, H.C., Tsao, C.Y., Barber, N.B., Servinsky, M.D., Payne, G.F., and W.E. Bentley (2015) Nano-guided Cell Networks as Conveyors of Molecular Communication, *Nature Communications*, 6:8500, DOI: 10.10138/n.comms9500.

279. Tschirhart, T., Zhou, X.Y., Ueda, H., Tsao, C.Y., Kim, E., Payne, G.F., and W.E. Bentley (2015) Electrochemical Measurement of the β-Galactosidase Reporter from Live Cells: A Comparison to the Miller Assay, *ACS Synthetic Biology*, 5(1):28-35, DOI:10.1021/acssynbio.5b00073.

280. Kuo, Y.-C., Wu, H.-C., Hoang, D., Bentley, W.E., D'Souza, W.D., and S.R. Raghavan (2016) Colloidal Properties of Nanoerythrosomes Derived from Bovine Red Blood Cells, *Langmuir*, 32(1):171-179. DOI: 10.1021/ acs.langmuir.5b03014.

281. Kim, Y.W., Mosteller, M.P., Subramanian, S., Meyer, M.T., Bentley, W.E., and R. Ghodssi (2016) An Optical Microfluidic Platform for Spatiotemporal Biofilm Treatment Monitoring, *Journal of Micromechanics and Microengineering*, 26(1): DOI: 10.1088/0960-1317/26/1/015013.

282. Kim, E., Panzella, L., Micillo, R., Bentley, W.E., Napolitano, A., and G.F. Payne (2015) Reverse Engineering Applied to Red Human Hair Pheomelanin Reveals Redox-Buffering as a Pro-Oxidant Mechanism, *Scientific Reports*, 5: 18447, DOI: 10.1038/srep18447.

283. Betenbaugh, M.J. and W.E. Bentley (2015) Editorial Overview: Synthetic Biology Hybrids – A Golden Age of Pathway Engineering, *Current Opinion in Biotechnology*, 36:IV-VI, DOI: 10.1016/j.copbio.2015.11.00.

284. Meyer, M.T., Subramanian, S., Kim, Y.W., Ben-Yoav, H., Gnerlich, M., Gerasopoulos, K., Bentley, W.E., and R. Ghodssi (2015) Multi-depth Valved Microfluidics for Biofilm Segmentation, *Journal of Micromechanics and Microengineering*, 25(9): 095003, DOI: 10.1088/0960-1317/25/9/09500.

285. Peng, X., Liu, Y., Bentley, W.E., and G.F. Payne (2016) Electrochemical Fabrication of Functional Gelatin-Based Bioelectronic Interface, *Biomacromolecules*, 17(2):558-63, DOI: 10.1021/acs.biomac.5b0149.

286. Wu, H.C., March, J.C., and W.E. Bentley (2016) Gene Silencing in Insect Cells Using RNAi, *Methods in Molecular Biology*, 1350:469-76, DOI: 10.1007/978-1-4939-3043-2_24.

287. Wu, H.-C., Hu, Y.-C., and W.E. Bentley (2016) Tubular Bioreactor for Probing Baculovirus Infection and Protein Production, *Methods in Molecular Biology*, 1350:469-76, DOI: 10.1007/978-1-4939-3043-2_23.

288. Wu, H.-C., Cha, H.J., and W.E. Bentley (2016) Evaluating Baculovirus Infection using Green Fluorescent Protein and Variants. *Methods in Molecular Biology*, 1350:469-76, DOI: 10.1007/978-1-4939-3043-2_22.

289. Quan, D.N., and W.E. Bentley (2016) Quorum Sensing Desynchronization Leads to Biomodality and Patterned Behaviors, *PLoS Computational Biology*, (submitted). doi: 10.1371/journal.pcbi.1004781.

Submitted Manuscripts

290. Bhokisham, N., Pakhchanian, H., Quan, D.N., Tschirhart, T., Tsao, C-Y., Payne, G.F., and W.E. Bentley (2016) Modular Construction of Multi-Subunit Protein Complexes using Engineered Tags and Microbial Transglutaminase, *Metabolic Engineering*, (in revision).

291. Bhokisham, N., Pakhchanian, H., Quan, D.N., Tschirhart, T., Tsao, C-Y., Payne, G.F., and W.E. Bentley (2016) Analyzing Biochemical Flux Generated from Enzyme Complexes Built Using Modular Construction Approach, *Data in Brief*, (in revision).

292. Wu, H.-C., Quan, D.N., Tsao, C.-Y., Liu, Y., Terrell, J.L., Luo, X., Yang, J.-C., Payne, G.F., and W.E. Bentley (2016) Conferring Biological Activity to Native Spider Silk: A Biofunctionalized Protein-Based Microfiber, *Biotechnology and Bioengineering*, (in revision).

293. Zargar, A., Quan, D.N., and W.E. Bentley (2016) Enhancing Intercellular Coordination: Rewiring Quorum Sensing Networks for Increased Protein Expression Through Autonomous Induction, ACS Synthetic Biology, (in revision).

OTHER PUBLICATIONS (Published Proceedings, Book Chapters:

Book Chapters - peer reviewed

Bentley, W. E. and D. S. Kompala (1989), Using Structured Kinetic Model for Analyzing Instability in Recombinant Bacterial Cultures, Ch. 10., in *Frontiers in Bioprocessing*, S. Sikdar, P. Todd and M. Bier, Editors, CRC Press, Inc., Boca Raton, FL, pp. 129-138.

Bentley, W.E. and R. R. Colwell (1996) "ERATO Project Analysis - Biological Sciences", Chapter 5 in Gamota, G., Bentley, W., Colwell R., Herer, P., Kahaner, D., Kusuda, T., Lee, J., Rowel, J., Young, L. *JTEC Panel Report on Japan's Exploratory Research for Advanced Technology (ERATO) and Precursory Research for Embryonic Science and Technology (PRESTO) Programs*, International Technology Research Institute, JTEC/WTEC Program, Loyola College in Maryland, Baltimore, Maryland, and the National Science Foundation, Washington, DC., pp. 43-50.

Gamota, G., Bentley, W., Colwell R., Lee, J., Rowel, J., and L.Young (1996) "Conclusions Regarding ERATO", Chapter 6 in Gamota, G., Bentley, W., Colwell R., Herer, P., Kahaner, D., Kusuda, T., Lee, J., Rowel, J., Young, L. *JTEC Panel Report on Japan's ERATO and PRESTO Basic Research Programs*, International Technology Research Institute, JTEC/WTEC Program, Loyola College in Maryland, Baltimore, Maryland, and the National Science Foundation, Washington, DC., pp.50-60.

Bentley, W., Colwell R., Gamota, G., and L.Young (1996) "Implications for the United States", Chapter 8 in Gamota, G., Bentley, W., Colwell R., Herer, P., Kahaner, D., Kusuda, T., Lee, J., Rowel, J., Young, L. *JTEC Panel Report on Japan's ERATO and PRESTO Basic Research Programs*, International Technology Research Institute, JTEC/WTEC Program, Loyola College in Maryland, Baltimore, Maryland, and the National Science Foundation, Washington, DC., pp.75-80.

Proceedings - not peer-reviewed

Bentley, W. E. and D. S. Kompala (1986), Modeling the Effects of Plasmid Replication and Product Expression on the Growth Rate of Recombinant Bacteria, *Proc. 16th Biochem. Eng. Symp*., L. E. Erickson and L. T. Fan, Editors.

Bentley, W. E. and D. S. Kompala (1987), Using Structured Kinetic Model for Analyzing Instability in Recombinant Bacterial Cultures, *Proc. 17th Biochem. Eng. Symp.*, P. J. Reilly, Editor.

Bentley, W. E., D. C. Andersen, D. S. Kompala and R. H. Davis (1988), Metabolic Effects of Chloramphenicol Resistance in the Recombinant Host/Vector System: *E. coli* RR1[pBR329], *Proc. 18th Biochem. Eng. Symp.*, R. H. Davis, Editor.

Bentley, W. E. and D. S. Kompala (1989), Plasmid Instability in Batch Cultures of Recombinant Bacteria: a laboratory experiment, ASEE Annual Conference Proceedings.

Sines, B. J., Teather, E. W., Wise, P., Lee, T.-S., Pham, M., Bentley, W. E, Weigand, W. A. and S. P. Harvey (1994), Investigation of Biological Reactor Designs for the Treatment of Compounds with Substrate Inhibited Growth Behavior, *Proceedings of the 1993 ERDEC Scientific Conference on Chemical Defense Research*, Aberdeen Proving Ground, Maryland, 445-451.

Bentley, W.E., J.F. Bunnett, J.J. DeFrank, M., von Fahnestock, M.V. Haley, S.P. Harvey, L. Issacson, J.J. Kilbane, J.E. Kolakowski, M.P. Labare, J.-L. Ontiveros, J.R. Wild (1994), Biodegradation of Chemical Warfare Agents: Demilitarization Applications, *Proceedings of the 1993 Scientific Conference on Chemical Defense Research*, Aberdeen Proving Ground, Maryland, 1133-1138.

Wu, C.F., Cha, H.J., Valdes, J.J., and W.E. Bentley (1998) A Green Fluorescence Protein Fusion Strategy for On-line Monitoring the Expression and Location of Biologically Active Organophosphorous Hydrolase, *Proceedings of the 1998 Scientific Conference on Chemical and Biological Defense Research,* Aberdeen Proving Ground, Maryland.

Valle, M.A., Kaufman, J., Bentley, W.E., and Shiloach, J. (1998). Evaluation of Porous Microcarriers in Fluidized Bed Reactor for Protein Production by HEK293 Cells. In: Merten, W.-O., Perrin, P., Griffiths, B. (Eds.). New Developments and New Applications in Animal Cell Technology. Kluwer Academic Publishers. Dordrecht. pp 381-385.

Cha, H. J. and Bentley, W. E. (1999). Purification of Human Interleukin-2 Produced in Recombinant Insect Cells by Fusion with Green Fluorescent Protein and Metal Affinity Ligand, *Theories and Applications of Chemical Engineering*, 5(2): 3177-3180.

Kramer, S.F., Cha, H.J., Rao, G., and W.E. Bentley (2001) Production of Proteins in *Trichoplusia ni* Larvae: Process Identification and *In vivo* Manipulation, in *The 6th NISES/COE International Symposium "Prospects for the Development of Insect Factories"*, National Institute of Sericultural and Entomological Sciences, Tsukuba, Japan, p. 83-88.

Bolisay, L.D.V., March, J.F. March, W.E. Bentley, P. Kofinas (2004) Biomimetic recognition of viruses using molecularly imprinted polymer hydrogels, Mat. Res. Soc. Symp. Proc., 787, G3.1/1-G3.1/5.

Wu, L-Q., Fernandes, R., Yi, H., Small, D.A., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F. Payne (2004) Chitosan at the Interface of Microfabrication and Biotechnology, Advances in Chitin Science, VolVII, pp. 146-149.

SELECTED SCHOLARLY LECTURES AND TALKS:

W. E. Bentley and D. S. Kompala, Modeling the Effects of Plasmid Replication and Product Expression on the Growth Rate of Recombinant Bacteria, 16th Biochemical Engineering Symposium, Manhattan, KS, April, 1986.

W. E. Bentley and D. S. Kompala, Modeling the Effects of Plasmid Replication and Product Expression on the Growth Rate of Recombinant Bacteria, ACS National Meeting, Anaheim, CA, August, 1986.

W. E. Bentley, Instability of Recombinant Bacterial Cultures, 1st Annual Colorado Biochemical Engineering Symposium, Boulder, CO, May, 1987.

D. S. Kompala, W. E. Bentley, and B. C. Batt, Lumped Metabolic Models for Prediction of Specific Growth Rates of Recombinant Bacterial and Hybridoma Cultures, AIChE Annual Meeting, NY, November, 1987.

W. E. Bentley and D. S. Kompala, Using Structured Kinetic Model for Analyzing Instability in Recombinant Bacterial Cultures, 17th Biochemical Engineering Symposium, Ames, IA, April, 1987.

W. E. Bentley and D. S. Kompala, Recombinant Bacterial Population Dynamics in Continuous Cultures at Different Dilution Rates: Experimental Data vs. Model Predictions, 196th ACS National Meeting, Los Angeles, CA, August, 1988.

W. E. Bentley, D. S. Kompala, and R. H. Davis, Optimal Induction of Protein Expression in Recombinant Bacterial Cultures, AIChE Annual Meeting, Washington, D.C., November, 1988.

W. E. Bentley, D. C. Andersen, D. S. Kompala and R. H. Davis, Metabolic Effects of Chloramphenicol Resistance in the Recombinant Host/Vector System: *E. coli* RR1[pBR329], 18th Biochemical Engineering Symposium, Estes Park, CO, April, 1988.

W. E. Bentley and D. S. Kompala, Plasmid Instability in Batch Cultures of Recombinant Bacteria, ASEE/CHED Annual Meeting, Lincoln, NE, May, 1989.

W. E. Bentley and D. S. Kompala, Prediction and Measurement of Operating Conditions which Maximize Product Synthesis from Inducible Expression Vectors, Eleventh Symposium on Biotechnology for Fuels and Chemicals, Colorado Springs, CO, May, 1989.

W. E. Bentley, N. Mirjalili, D. C. Andersen, D. S. Kompala and R. H. Davis, Plasmid Encoded Protein: The Principal Factor in the "Metabolic Burden" Associated with Recombinant Bacteria, AIChE Annual Meeting, San Francisco, CA, November, 1989.

S.W. Harcum and W. E. Bentley, Heterogeneous Hyper-Expression Characteristics in Recombinant Bacterial Cultures, Mid-Atlantic Biochemical Engineering Consortium, Charlottesville, VA, March, 1990.

W. E. Bentley, R. H. Davis and D. S. Kompala, Coupled Interactions in Inducible Expression Systems, 199th ACS National Meeting, Boston, MA, April, 1990.

O. E. Quiroga and W. E. Bentley, Heterogeneity and Antibiotic Resistance Characteristics in Recombinant *E. coli* Cultures, Mid-Atlantic Biochemical Engineering Consortium, College Park, MD, March, 1991.

Y. F. Ko, W. E. Bentley, and W. A. Weigand, A Metabolic Approach to Describe the Energy Efficiency *of E. coli*, MBI Annual Retreat, Center for Advanced Research in Biotechnology, Shady Grove, MD, May, 1991.

S. W. Harcum, D. M. Ramirez, and W. E. Bentley, Optimal Nutrient Feed Policies for Heterologous Protein Production, MBI Annual Retreat, CARB, Shady Grove, MD, May, 1991.

S. W. Harcum, D. M. Ramirez, and W. E. Bentley, Optimal Nutrient Feed Policies for Heterologous Protein Production, 13th Symposium on Biotechnology for Fuels and Chemicals, Colorado Springs, CO, May, 1991.

S. W. Harcum and W. E. Bentley, Stringent Response as a Function of Induction in Recombinant *E. coli*, National ACS Meeting, New York, August, 1991.

M.-Q. Pham and W. E. Bentley, Expression and Secretion of Collagenase in Aqueous Two-Phase Fermentations of *Vibrio alginolyticus*, Annual Meeting of Sigma Xi, Crystal City, VA, November, 1991.

W. E. Bentley and D. M. Ramirez, Coordinated Feeding Strategies for the Optimal Production of Foreign Protein, 1991 AIChE Annual Meeting, Los Angeles, California, November, 1991.

D. M. Ramirez and W. E. Bentley, Amino Acid Supplementation and Its Effect on Foreign Protein Stability, Mid-Atlantic Biochemical Engineering Consortium, New Brunswick, NJ, March, 1992.

S. W. Harcum and W. E. Bentley, Protease Detection, Characterization and Quantification in Recombinant *E. coli*, 9th International Biotechnology Symposium, Crystal City, VA, August 1992.

M. Y. Wang, V. Vakharia, and W. E. Bentley, Heterologous Protein Production in High Cell Density Insect Cell Culture, AIChE Annual Meeting, Miami, FL, November 1992.

S. W. Harcum and W. E. Bentley, Host Cell Responses from Induced Gene Expression: Experimental Analysis and Theory, AIChE Annual Meeting, Miami, FL, November 1992.

M. Y. Wang and W. E. Bentley, Integrated Protein Expression and Separation in Baculovirus/Insect Cell Systems, Mid-Atlantic Biochemical Engineering Consortium, Philadelphia, PA, March 1993.

D. M. Ramirez and W. E. Bentley, Use of a Precursor-Based Fed-Batch Feeding Policy to Improve Foreign Protein Synthesis and Long-term Stability by Avoiding Stress Responses, National ACS Meeting, Denver, CO, March 1993.

S. Winston, W. E. Bentley, T. R. Pulliam, H. Grosfield, Y. Flashner, M. White, Z. Shalita, S. Reuveny, D. Marcus, Y. Papir, H. Rosenberg, T. Bino, S. Cohen, A. Shafferman, Optimization of Production of Four HIV-peptide β-galactosidase fusion proteins in *E. coli*, National ACS Meeting, Denver, CO, March 1993.

D. M. Ramirez and W. E. Bentley, Inhibition of Stress Responses by a Fed-Batch Precursor-Based Feeding Strategy: Effect on Recombinant Protein Stability and Expression, award winning poster (SIM 1993 Best Abstract Award) Annual Meeting of Society for Industrial Microbiology, joint with the Canadian Society of Microbiologists, Toronto, Canada, August 1993.

D. M. Ramirez and W. E. Bentley, Inhibition of Stress Responses Associated with Overexpression Using Model-Based Feeding Strategies, AIChE Annual Meeting, St. Louis, MO, November, 1993.

W.E. Bentley, M.Y. Wang, and V. Vakharia, Development of an Efficient Bioprocess for Poultry Vaccines Using High Density Insect Cell Culture, Engineering Foundation Conference, *Biochemical Engineering VIII*, Princeton, NJ, July, 1993.

S. W. Harcum and W. E. Bentley, Analysis of Stress Response Dynamics in Recombinant *E. coli*, AIChE Annual Meeting, St. Louis, MO, November 1993.

W. E. Bentley, Y.-F. Ko, and W. A. Weigand, A Metabolic Approach for Describing the Acetate Overflow Phenomena During Aerobic *E. coli* Fermentations, AIChE Annual Meeting, St. Louis, MO, November, 1993.

M. Y. Wang, W. E. Bentley, and V. Vakharia, Integrated Strategies for Protein Expression and Metal-Affinity Separation in the Insect Cell/Baculovirus Expression System, AIChE Annual Meeting, St. Louis, MO, November, 1993.

B. J. Sines, E. W. Teather, P. Wise, T.-S. Lee, M. Pham, W. E. Bentley, W. A. Weigand and S. P. Harvey, Investigation of Biological Reactor Designs for the Treatment of Compounds with Substrate Inhibited Growth Behavior, Scientific Conference on Chemical Defense Research, Aberdeen Proving Ground, Maryland, 1994.

D.M. Ramirez, T.R. Pulliam, S.W. Harcum and W.E. Bentley, Towards Optimal Expression in *E. coli* through Coordination of Metabolism and Cellular Stress, BioEast '94, Washington, DC, January, 1994.

W.E. Bentley, B. Kebede, T. Franey, and M.Y. Wang, Segregated Characterization and Heuristic Optimization of Recombinant Epoxide Hydrolase Synthesis via Baculovirus/Insect Cell Expression System, International Society of Chemical Reaction Engineering (ISCRE) meeting, Baltimore, MD, October, 1994.

T.S. Lee, M.Q. Pham, W.E. Bentley, W.A. Weigand, and S.P. Harvey, Optimizing Microbial Degradation of Thiodiglycol in Batch and Continuous Bioreactors, AIChE Annual Meeting, San Francisco, CA, Nov., 1994.

D.M. Ramirez and W. E. Bentley, Characterization of Cellular Stress in Recombinant Cultures by a Lumped Metabolic Model, AIChE Annual Meeting, San Francisco, CA, November, 1994.

M.Q. Pham, T.-S. Lee, W.A. Weigand and W. E. Bentley, Ex-situ Degradation of Thiodiglycol: Dynamics and Optimization, 9th Annual Middle Atlantic Biochemical Engineering Consortium (MABEC), North Carolina Biotechnology Center, Research Triangle Park, NC, March, 1995.

M.Q. Pham, T.-S. Lee, W.A. Weigand and W. E. Bentley, Reactor Comparisons for the Biodegradation of Thiodiglycol, a Product of Mustard Gas Hydrolysis, 17th Symposium on Biotechnology for Fuels and Chemicals, Vail, CO, May, 1995.

D.M. Ramirez, T. R. Pulliam, S.W. Harcum, and W.E. Bentley, Protease Activities Indicative of Cellular Stress in *E. coli* - Impact on Heterologous Protein Yield, ACS National Meeting, Anaheim, CA, April, 1995.

M.Y. Wang, M. Valle, T. R. Pulliam, and W. E. Bentley, Elicitation of Protease Activity in *Spodoptera frugiperda* Cell Cultures, ACS National Meeting, Anaheim, CA, April, 1995.

A. Pilon, P. Yost, T. Chase, G. Lohnas, and W. E. Bentley, Fermentation Optimization of Ubiquitin Fusion Expression: The Effects of Heat Shock on Yield, Ubiquitin and Protein Degradation, FASEB Summer Conference, Saxtons River, VT, June, 1995.

S. Naggie, and W.E. Bentley, Protease Activities in Baculovirus-Infected Insect Cells: pH, ATP, Cofactor, Amino Acid Dependence, Annual AIChE Meeting, Miami Beach, FL, November, 1995.

A. Pilon, P. Yost, T. Chase, G. Lohnas, T. Burkett, S. Roberts, and W. Bentley, Ubiquitin Fusion Technology: Bioprocessing of Peptides, '95 Recent Advances in Fermentation Technology meeting, Society for Industrial Microbiology (SIM) and ACS Division of Biochemical Technology (BIOT), San Diego, CA, November, 1995.

D.M. Ramirez and W. E. Bentley, Metabolic Modeling of Recombinant *E. coli* Dynamics Upon Induction of Cellular Stress, Annual AIChE Meeting, Miami Beach, FL, November, 1995.

T.S. Lee, S. P. Harvey, and W. E. Bentley, Degradation of QL, the Precursor of Organophosphate Nerve Agent (VX), by Microorganisms Isolated from Municipal Wastewater, Annual Meeting of American Association for the Advancement of Science (AMSIE '96), Baltimore, MD, February, 1996.

S. Naggie, T.R. Pulliam, and W.E. Bentley, Elicitation of Protease Activity in Insect (*Spodoptera frugiperda*) Cell Cultures, ACS National Meeting, New Orleans, LA, March, 1996.

T.R. Pulliam, D. Sampey, and W. E. Bentley, 1,2, & 3D Substrate Gel Electrophoresis for Elucidation of Cellular Stress-Related Proteolysis in *E. coli*, ACS National Meeting, New Orleans, LA, March, 1996.

Y.C. Hu, M.Y. Wang, and W.E. Bentley, A Tubular Reactor for the Infection of Insect Cells with Recombinant Baculovirus, ACS National Meeting, New Orleans, LA, March, 1996.

Lee, T.-S., Weigand, W.A., and W. E. Bentley, Observations of Metabolite Formation and Variable Yield in Thiodiglycol Biodegradation Processes: Impact on Reactor Design, 18th Symposium on Biotechnology for Fuels and Chemicals, Gatlinburg, TN, May, 1996.

Chase, T.E., Madurawe, R., Pulliam, T.R., Valdes, J.J., and W.E. Bentley, Synthesis and One-step Purification of Botulinum Toxin Antibody Fragments (FAb) from Recombinant E. coli: Effects of Cell Physiology on Fermentation and Purification Yields, Annual Meeting, Society for Industrial Microbiology, Research Triangle Park, NC, August, 1996.

Pham, M.Q., Wier, M., Sottong, P., and W.E. Bentley, Expression of Human IL-2 in Insect larvae (*Trichoplusia ni*) Infected with AcNPV: Influence of Proteolysis, Annual AIChE Meeting, Chicago, IL, November, 1996.

Hu, Y.-C., and W.E. Bentley, Formation and Purification of Infectious Bursal Disease Virus-like Particles in Baculovirus Expression System, 11th Annual Mid-Atlantic Biochemical Engineering Consortium, Philadelphia, PA, March, 1997.

Dalal, N. and W. E. Bentley, β-galactosidase as a Reporter Protein for vIBD-7 Viral Protein Expression in Sf-9 Insect Cell Culture, 11th Annual Mid-Atlantic Biochemical Engineering Consortium, Philadelphia, PA, March, 1997.

Gill R.T., Cha H., Jain A., Rao G., and W. E. Bentley, Generating Controlled Reducing Environments in Aerobic Recombinant *Escherichia coli* Fermentations: Effects on Cell Growth, Oxygen Uptake, Heat Shock Protein Expression, and CAT activity, 11th Annual Mid-Atlantic Biochemical Engineering Consortium, Philadelphia, PA, March, 1997.

Pham, M.Q., Wier, M., Sottong, P., and W.E. Bentley, Expression of Human IL-2 in Insect larvae (*Trichoplusia ni*) Infected with AcNPV: Influence of Proteolysis, 11th Annual Mid-Atlantic Biochemical Engineering Consortium, Philadelphia, PA, March, 1997.

Albano, C.R., Randers-Eichhorn, L., Bentley, W.E., and G. Rao. On-line Monitoring of Recombinant Gene Expression During Fermentation. 213th ACS National Meeting. San Francisco, CA. April, 1997.

Cha, H.J., Rao, G., and W.E. Bentley, Green Fluorescent Protein as a "Stress Probe" in Recombinant *E. coli*. 213th ACS National Meeting. San Francisco, CA. April, 1997.

Srivastava, R., Peterson, M., and W.E. Bentley, Antisense RNA for Manipulating Cellular Stresses in *E. coli*. 213th ACS National Meeting. San Francisco, CA. April, 1997.

Cha, H.J., Pham, M.Q.K., Rao, G., and W.E. Bentley, Expression of Green Fluorescent Protein in Insect Larvae and its Application for Heterologous Protein Production. 213th ACS National Meeting. San Francisco, CA. April, 1997.

Lee, T.S., and W.E. Bentley, Biocatalytic Transformation of Thiodiglycol, the Main Hydrolysis Product of Sulfur Mustard, to [(2-hydroxyethyl)thio]acetic Acid and Thiodiglycolic Acid, 213th ACS National Meeting. San Francisco, CA. April, 1997.

Cha, H. J., Dalal, N. G., Pham, M. Q., Vakharia, V., and Bentley, W. E., Expression of fused Protein, Human Interleukin-2 and Green Fluorescent Protein, in Insect Larvae, Annual AIChE Meeting, Los Angeles, CA, USA, November, 1997.

Cha, H. J., Dalal, N. G., Pham, M. Q., Vakharia, V., and Bentley, W. E., Application of Green Fluorescent Protein in Insect Cell Systems (Suspended Insect Cells and Larvae), Second International Conference on Recent Advances in Fermentation Technology (RAFT II), San Diego, CA, USA, November, 15-18, 1997.

Naggie, S. and W.E. Bentley, Appearance of Protease Activities Coincides with p10 and Polyhedrin-driven Protein Production in Baculovirus Expression System: Effects on Yield, AIChE Annual Meeting, Los Angeles, CA, November 1997.

Hu, Y.-C., Edwards, G.H., Vakharia, V.N., and W.E. Bentley, Coordinated Synthesis of Chimeric Virus-Like Particles in Insect Cells Designed for Affinity Purification Using IMAC, AIChE Annual Meeting, Los Angeles, CA, November, 1997.

Srivastava, R., Cha, H. J., Peterson, M. L., and Bentley, W. E. Repression of σ^{32} Expression Through Antisense Regulation, 12th Annual Mid-Atlantic Biochemical Engineering Consortium, Baltimore, MD, March, 1998.

DeLisa, M., Rao, G., Weigand, W., and W.E. Bentley, Control of Induced CAT Expression in *E. coli* Using Generic Model, 12th Annual Mid-Atlantic Biochemical Engineering Consortium, Baltimore, MD, March, 1998.

Gill, R.T., Shiloach, M., Wu, C.F., Chase, T.E., Madurawe, R., Valdes, J., and W.E. Bentley, Partial Purification of an *E. coli* Outer Membrane Protease that Degrades Recombinant Antibody, 12th Annual Mid-Atlantic Biochemical Engineering Consortium, Baltimore, MD, March, 1998.

C.R. Albano, L. Eichhorn, R. Natraj, H-J. Cha, J. Strong, W.E. Bentley, D. Frey and G. Rao. Novel Bioprocess Applications for Green Fluorescent Protein. 140th Meeting of the Society for General Microbiology, Nottingham, UK, March, 1998.

Srivastava, R., Cha, H.J., Peterson, M.S., and W. E. Bentley. Use of Antisense for Down-regulation of Deleterious Cellular Functions: A case study of σ^{32} response. 216th National ACS Meeting, Boston, MA, August, 1998.

Harcum, S.W. and W. E. Bentley. Overlapping Protease Activity Responses in Recombinant *Escherichia coli*: Implications for Protein Yields. 216th National ACS Meeting, Boston, MA, August, 1998.

Gill, R.T., Valdes, J.J. and W. E. Bentley. Differential Display Analysis of Stress-induced *Escherichia coli* Genes by RTPCR. 216th National ACS Meeting, Boston, MA, August, 1998.

Albano, C.R., Randers-Eichhorn, L., Bentley, W.E., and G. Rao. Quantitative Expression of Oxidative Stress Responses Monitored by Green Fluorescent Protein Promoter Probes in *Escherichia coli*. 216th National ACS Meeting, Boston, MA, August, 1998.

DeLisa, M.P., Rao, G., Weigand, W.A., and W. E. Bentley. Model-based Control of Induced Chloramphenicol Acetyltransferase Expression in *Escherichia coli* Fermentations. 216th National ACS Meeting, Boston, MA, August, 1998.

Randers-Eichhorn, L., Albano, C.R., Bentley, W.E., and G. Rao. Real Time Response of Oxidative Stress Using an Optical Green Fluorescent Protein Probe. 216th National ACS Meeting, Boston, MA, August, 1998.

Albano, C.R., Randers-Eichhorn, L., Bentley, W.E., and G. Rao. Detection of Oxidative Stress Induction Using GFP Promoter Probes. 5th Annual Meeting of The Oxygen Society, Washington D.C., November 19-23, 1998

Cha, H.J., Chase, T.E., and W. E. Bentley. Application of Green Fluorescent Protein as a Fusion Marker in Recombinant *Pichia pastoris* Fermentation: Human Interleukin-2 as a Model Product. Annual Meeting of American Institute of Chemical Engineers. Miami Beach, FL, November, 1998.

Cha, H.J., Dalal, N.G., Pham, M.Q., and W. E. Bentley. Purification of Human Interleukin-2 Fusion Protein Produced in Insect Larvae is Facilitated by Fusion with Green Fluorescent Protein and Metal Affinity Ligand. Annual Meeting of American Institute of Chemical Engineers. Miami Beach, FL, November, 1998.

Bentley, W.E., Cha, H.J., DeLisa, M.P., Chae, H.J., Rao, G., and W.A. Weigand, Sensitive Detection of Stress and On-line Control of Bioreactors Enabled by Transcriptional and Translational GFP Fusions, 217th National Meeting, American Chemical Society, Anaheim, CA, March, 1999.

Cha, H.J., Wu, C.F., Valdes, J.J., Rao, G., and W.E. Bentley, Observations of Green Fluorescent Protein as a Non-Invasive Fusion Marker for Heterologous Protein Production in Escherichia coli, 217th National Meeting, American Chemical Society, Anaheim, CA, March, 1999.

Srivastava, R., Peterson, M.J., and W.E. Bentley, Kinetic Modeling of the σ^{32} Response in *Escherichia coli* using a Stochastic Petri Net, 217th National Meeting, American Chemical Society, Anaheim, CA, March, 1999.

Gill, R.T., Valdes, J.J., and W.E. Bentley, RTPCR Differential Display Analysis of Stress-Induced *E. coli* Genes Using a Novel "Stress" Membrane, 217th National Meeting, American Chemical Society, Anaheim, CA, March, 1999.

Cha, H.J., Wu, C.-F., and W. E. Bentley. Expression of Fusion Protein using Green Fluorescent Protein as a Fusion Partner in Recombinant *Escherichia coli*, Annual Meeting of the Korean Institute of Chemical Engineers, Suwon, Korea, April, 1999.

Cha, H.J., Srivastava, R., and W.E. Bentley. Non-Invasive Stress Detection by Heat Shock Gene-Green Fluorescent Protein Fusions. The 8th Congress of Asian Pacific Confederation of Chemical Engineering. Seoul, Korea, August, 1999.

Cha, H.J., Pham, M.Q., Dalal, N.G., and W.E. Bentley. Recombinant Insect Larval Production Process is Optimized by Generating Fusions with Green Fluorescent Protein. The 8th Congress of Asian Pacific Confederation of Chemical Engineering. Seoul, Korea, August, 1999.

Li, J., Bentley, W.E., and G. Rao. Evaluating Expression of Green Fluorescent Protein in *Saccharomyces cerevisiae* Under Control of GAL1 Promoter, Annual Meeting of Society for Industrial Microbiology, Arlington, VA, August, 1999.

Albano, C.R., Bentley, W.E. and G. Rao. Generation of an Oxidative Stress Probe Library and its Application Toward Drug Screening. Annual Meeting of Society for Industrial Microbiology, Arlington, VA, August, 1999.

Cha, H. J. and Bentley, W. E., Optimization of Human Interleukin-2 Production in Recombinant Insect Laval System using Green Fluorescent Protein, Annual Meeting of the Korean Institute of Biotechnology and Bioengineering, Chunchun, Korea, October, 1999.

Cha, H. J. and Bentley, W. E., Purification of Human Interleukin-2 Produced in Recombinant Insect Cells by Fusion with Green Fluorescent Protein and Metal Affinity ligand, Annual Meeting of the Korean Institute of Chemical Engineers, Masan, Korea, October, 1999.

DeLisa, M.P., Valdes, J.J., and Bentley, W.E., *Escherichia coli* Bioreactors as Multicellular Organisms via Quorum Sensing, 219th National Meeting of the American Chemical Society, San Francisco, CA, March, 2000.

Rao, G., and Bentley, W.E., Green Fluorescent Protein as a Paradigm for Integrated Bioprocessing: An Academic Perspective, 219th National Meeting of the American Chemical Society, San Francisco, CA, March, 2000.

Srivastava, R., Cha, H.-J., Peterson, M.S., and Bentley, W.E., σ^{32} Antisense mRNA Increases Biological Activity of Recombinant Organophosphorous Hydrolase from *Escherichia coli*, 219th National Meeting of the American Chemical Society, San Francisco, CA, March, 2000.

Chae, H.J., DeLisa, M.P., Cha, H.J., Li, J., Weigand, W.A., Valdes, J.J., Rao, G., and Bentley, W.E. On-line Optimization and Control of Recombinant Protein Expression in High-Cell-Density *Escherichia coli* Cultures Using GFP-Fusion Monitoring, 219th National Meeting of the American Chemical Society, San Francisco, CA, March, 2000.

Shiloach, M., DeLisa, M.P., Zhang, Z., Sirkis, J., and W.E. Bentley. Rapid Detection of Recombinant Proteins in Cell Extracts Using a Generic Anti-polyhistidine Long Period Grating Optical Biosensor, 219th National Meeting of the American Chemical Society, San Francisco, CA, March, 2000.

Gill, R.T., Valdes, J.J., and W.E. Bentley. Analysis of Differential Stress Gene Transcription in Response to Recombinant Protein Over-Expression and High Cell Density Fermentation in *Escherichia coli*, 219th National Meeting of the American Chemical Society, San Francisco, CA, March, 2000.

Bentley, W.E., Gill, R.T., DeLisa, M.P. High Cell Density Recombinant Escherichia coli Fermentation: Improving Yield by Examining Global Gene Regulation, Society of Industrial Microbiology, San Diego, CA, August, 2000.

DeLisa, M.P., Valdes, J.J., and W.E. Bentley. Harnessing the Quorum Circuit for Improved Yield in Recombinant High Cell Density Cultures of *E. coli*. Society of Industrial Microbiology, San Diego, CA, August, 2000.

Pilevar, S., DeLisa, M.P., Davis, C.C., Bentley, W.E., and J. Sirkis. Evanescent Wave Antibody-Antigen Biosensor Based on Long Period Fiber Bragg Grating, *Ofs*$_{2000}$, 14th International Conference on Optical Fiber Sensors, Venice, Italy, October, 2000.

Dalal, N.G., Cha, H.J., and W.E. Bentley. Expression of GFP under Early Expression Promoter PETL for Simplification Recombinant Protein Monitoring, AIChE Annual Meeting, Los Angeles, CA, November, 2000.

Kramer, S.F., Kostov, Y., Rao, G., and W.E. Bentley. Optimizing Harvest Time of *Trichoplusia ni* Using an Online GFP Optical Probe, AIChE Annual Meeting, Los Angeles, CA, November, 2000.

DeLisa, M.P., Valdes, J.J., and W.E. Bentley. Genomic Analysis of Global Gene Regulation by Quorum Sensing in *Escherichia coli.* AIChE Annual Meeting, Los Angeles, CA, November, 2000.

Bentley, W.E., Valdes, J.J., Cha, H.J., Wu, C.-F., Molecular Strategies for Immobilization and Visualization of Organophosphorus Hydrolase Activity in Column Matrices, Pacifichem Meeting, Honolulu, Hawaii, December, 2000.

DeLisa, M.P., Wu, C.F., Valdes, J.J., and W.E. Bentley. Tapping the Lines of Cell-to-cell Communication in *Escherichia coli:* Perspectives on Signaling Dynamics and Circuit Architecture. 221st National Meeting of the American Chemical Society, San Diego, CA, April, 2001.

Lu, C., Albano, C.R., Bentley, W.E., and G. Rao. Differential Rates of Gene Expression Monitored by Green Fluorescent Protein. 221st National Meeting of the American Chemical Society, San Diego, CA, April, 2001.

Li, J. Bentley, W. E., and G. Rao. Expression, Localization and Transport/Secretion of GFP and GFP-fusion Protein in *Saccharomyces cerevisiae*. ACS Annual Meeting, San Diego CA April 1-6, 2001.

Payne, G.F., Chen, T., Valzquez-Duhalt, R., Bentley, W.E., Smith, P.J. Combinatorial Approach to Biopolymer Coupling and Cross-linking. 221st National Meeting of the American Chemical Society, San Diego, CA, April, 2001.

Kramer, S.F., and W. E. Bentley. *In vivo* Manipulation of *Trichoplusia ni* Larvae to Produce Recombinant Protein. 221st National Meeting of the American Chemical Society, San Diego, CA, April, 2001.

Bleckwenn, N.A., Bentley, W.E., and J. Shiloach. Investigation of the VOTE Vaccinia Virus System for Recombinant Protein Production, Annual Meeting of American Institute of Chemical Engineers, Reno, NV, November, 2001.

Yi, H., Hodzic, V., DeLisa, M.P., Pilevar, S., Davis, C.C., and W.E. Bentley. Monitoring of Gene Regulation with Tapered Optical Fiber Nucleic Acid Hybridization Sensor. Annual Meeting of American Institute of Chemical Engineers, Reno, NV, November, 2001.

Kramer, S.F., and W.E. Bentley. *In vivo* Downregulation of Host Function as a Tool for Enhancing Yield. Annual Meeting of American Institute of Chemical Engineers, Reno, NV, November, 2001.

Yi, H.M, Hodzic, V., Sumner, J., Wu, L.-Q., Payne, G.F., Gillespie, J., Davis, C., and W.E. Bentley. Fast Detection of Nucleic Acid Hybridization with a Tapered Optical Fiber Sensor. DOE Genome Contractor-Grantee Workshop IX, Oakland, CA, January, 2002.

Bentley, W.E., The Elucidation of Quorum Behavior: a Target for Metabolic Engineering, TIGR/UMBI Minisymposium, CARB, Shady Grove, MD, April, 2002.

Ghodssi, R., L.-Q. Wu, H.M, Yi, W.E. Bentley, G. Rubloff, and G. F. Payne, Voltage-Dependent Assembly of the Polysaccharide Chitosan onto an Electrode Surface, presented at 49th International Symposium, American Vacuum Society, Denver, CO, November, 2002.

DeLisa, M.P., Wang, L., Kim, S.H., Valdes, J.J., and W.E. Bentley, Genomics Based Understanding of Quorum-Circuitry: Impact on Protein Expression in *E. coli*, Annual meeting of Society of Industrial Microbiology, Philadelphia, PA, August, 2002.

Wang, L., Kim, S.H., Yi, H., Valdes, J.J., and W.E. Bentley, Perception and Communication of Stresses in Fermentation Processes: A Genomics / Bioinformatics Approach to Reveal *E. coli* Multicellularity, Annual meeting of Society of Industrial Microbiology, Philadelphia, PA, August, 2002.

Wu, L.Q., A. P. Gadre, H. Yi, M. J. Kastantin, S. Li, G. W. Rubloff, W. E. Bentley, G. F. Payne and R. Ghodssi, "Voltage-Dependent Assembly of the Polysaccharide Chitosan onto an Electrode Surface," *American Vacuum Society 49th International Symposium*, Denver, CO, November 3-8, 2002.

DeLisa, M.P., Valdes, J.J., and W.E. Bentley, Microbial Cell Factories: Cell-to-Cell Communication Plays a Key Role, Biotechnology Section, 23rd Army Science Conference, Orlando, FL, December, 2002.

Lu, C., Bentley, W.E., Cha, H.J., Garcia, J., and G. Rao, Oxidative Stress Responses in *E. coli* Fermentations under Controlled Conditions, 225th ACS National Meeting, New Orleans, LA, March, 2003.

Bentley, W.E., Kramer, S.F., DeLisa, M.P., Srivastava, R., Wang, L., Carter, K., and C.Y. Tsao, Target Hierarchy: The Cases for Interfering RNA (RNAi) and Transient Controllers, 225th ACS National Meeting, New Orleans, LA, March 2003.

Yung, C.W., Hashimoto, Y., Bentley, W.E., and T.A. Barbari, Applications of Red Fluorescent Protein Markers for Indicating Therapeutic Protein Expression and Pericellular Oxygen Concentrations, 225th ACS National Meeting, New Orleans, LA, March 2003.

Bleckwenn, N.A., Bentley, W.E., and J. Shiloach, Expression of EGFP Reporter Protein with a Recombinant Vaccinia Virus – Comparison of Microcarrier and Cell Suspension Based Bioreactor Systems, 225th ACS National Meeting, New Orleans, LA, March, 2003.

Yi, H., Wu, L.-Q., Small, D.A., Chen, T., Ghodssi, R., Rubloff, G.W., Payne, G.F., and W.E. Bentley, Novel Assembly Platform for Integrating Biological Species within MEMS Devices, 225th ACS National Meeting, New Orleans, LA, March, 2003.

Bentley, W. E., "Biotechnology: A Primer and Emerging Trends", Keynote Speaker at Maryland Junior Science and Humanities Symposium, The Adventure of Science, Bethesda, MD, March, 2003.

Wang, L., Bentley, W.E., Biosynthesis of the Quorum Sensing Autoinducer-2 (AI-2) Is Negatively Regulated by cAMP and cAMP Receptor Protein (CRP) in *Escherichia coli*, General Meeting of the American Society for Microbiology, Washington, DC, May, 2003.

Du, J., Li, J., Bentley, W.E., and E. Zafiriou, On Modeling and Pathway Performance Optimization of *E. coli* Genetic Circuits, AIChE Annual Meeting, San Francisco, CA, Nov., 2003.

Wu, L.Q., H. Yi, M. J. Kastantin, S. Li, D. A. Small, J. J. Park, G. W. Rubloff, R. Ghodssi, W. E. Bentley and G. F. Payne, "Chitosan - A Biomaterial Interface that can be Selectively Deposited onto Micropatterned Surfaces and Conjugated to Sensing Biomolecules," *American Vacuum Society 50th International Symposium*, Baltimore, Maryland, November 2-7, 2003.

Pederzolli, C., L. Lunelli, G. Speranza, R. Canteri, M. Anderle, J. J. Park, L.- Q. Wu, H. Yi, R. Ghodssi, W. E. Bentley, G. F. Payne and G. W. Rubloff, "Material and Surface Characterization of Electrodeposited Polysaccharide Chitosan Film as a Platform for Biomolecular Reactions in BioMEMS Systems," *American Vacuum Society 50th International Symposium*, Baltimore, Maryland, November 2-7, 2003.

Payne, G.F., T. Chen, L.- Q. Wu, D. A. Small, H. Yi, R. Ghodssi, G. W. Rubloff and W. E. Bentley, "Assembly and Disassembly of Hydrogels to Entrap, Grow, and Release Cells," A*merican Vacuum Society 50th International Symposium*, Baltimore, Maryland, November 2-7, 2003.

Wu, L.Q., R. Fernandes, H. Yi, D. A. Small, G. W. Rubloff, R. Ghodssi, W. E. Bentley and G. F. Payne, "Chitosan at the Interface of Microfabrication and Biotechnology," *Advances in Chitin Science, EUCHIS'03*, Montreal, August 2003.

Wu, L.Q., H. Yi, S. Li, D. A. Small, J. J. Park, G. W. Rubloff, R. Ghodssi, W. E. Bentley and G. F. Payne, "Voltage-Programmable Biofunctionality in MEMS Environments Using Electrodeposition of a Reactive Polysaccharide," *Transducers '03, The 12th Conference on Solid-State Sensors, Actuators, and Microsystems*, Boston, Massachusetts, June 8-12, 2003.

March, J., and W.E. Bentley, "Post-transcriptional Gene Silencing in the Metabolic Engineering of *Drosophila melanogaster"*, AIChE Annual Meeting, San Francisco, CA, Nov., 2003.

Yi, H., Wu, L-Q., Ghodssi, R., Rubloff, G.W., Payne, G.F., and W.E. Bentley, "A Novel Platform for Assembling Biological Species onto Biosensor Surfaces", AIChE Annual Meeting, San Francisco, CA, Nov., 2003.

Bleckwenn, N.A., Bentley, W.E., and J. Shiloach, "Evaluation of Production Cell Line for the Vaccinia Virus Expression System", Cell Culture Engineering IX, Cancun, Mexico, March, 2004.

Tao, Y., Fishman, A., Bentley, W.E., and T.K. Wood, "Saturation mutagenesis of toluene 4-monooxygenase from *Pseudomonas mendocina* KR1 for the production of 3-methoxycatechol, methoxyhydroquinone, and methylhydroquinone", 227th ACS National Meeting, Anaheim, CA, March, 2004.

Yi, H., Wu, L.-Q., Ghodssi, R., Rubloff, G.W., Payne, G.F., and W.E. Bentley, "A novel biomolecule assembly technique onto biosensor surfaces," 227th ACS National Meeting, Anaheim, CA, March, 2004.

Yung, C., Bentley, W.E., and T.A. Barbari, "Counteracting Hypoxia-Induced Apoptosis in Biohybrid Artificial Organs", Cell Culture Engineering IX, Cancun, Mexico, March, 2004. (Best Student Poster Award of Conference).

Fishman, A., Tao, Y., Bentley, W.E., and T.K. Wood, "Toluene Monooxygenase of *Ralstonia pickettii* PKO1 is a *para* Hydroxylating Enzyme", General Meeting of the American Society for Microbiology, New Orleans, LA, May, 2004.

Yang, L., Portugal, F., and W.E. Bentley, "Effects of Conditioned Medium on Growth of *Listeria innocua*: Crosstalk with *E. coli* AI-2", General Meeting of the American Society for Microbiology, New Orleans, LA, May, 2004.

Li, J., Wang, L., Zafiriou, E., and W.E. Bentley, "Kinetic Analysis of *Escherichia coli* Quorum Signal AI-2 Biosynthesis Circuit by Stochastic Petri Nets", General Meeting of the American Society for Microbiology, New Orleans, LA, May, 2004.

Fairbanks, B., Bentley, W.E., Fishman, A., Tao, Y., and T.K. Wood, "Tailoring Regiospecificity of Toluene Monooxygenase of *Ralstonia pickettii* PKO1 via Saturation Mutagenesis", General Meeting of the American Society for Microbiology, New Orleans, LA, May, 2004.

Tsao, C.Y., Wang, L., Hashimoto, Y., Yang, L., DeLisa, M.P., Wood, T.K., Valdes, J.J., and W. E. Bentley, "Rewiring Quorum Circuitry for Expression of Recombinant Proteins in *E. coli*, ASM Meeting on 'Cell-Cell Communication in Bacteria'", Banff, Canada, July, 2004.

Yi, H., Wu, L-Q., Payne, G.F., and W.E. Bentley, "Exploiting Targeted Properties of Biopolymers for Facile and Spatially Selective Biomolecule Assembly", AIChE Annual Meeting, Austin, TX, Nov. 2004.

Kofinas, P., Bolisay, L.D.V., Culver, J.N., and W.E. Bentley, "Recognition of Viruses Using Molecularly Imprinted Polymers", AIChE Annual Meeting, Austin, TX, Nov. 2004.

Li, J., Wang, L., Zafiriou, E., and W.E. Bentley, "Investigating Transport and Processing of Autoinducer-2 (AI-2) in *Escherichia coli*", AIChE Annual Meeting, Austin, TX, Nov. 2004.

Raman, B., Nandakumar, N.P., Wang., L., Muthuvijayan, V., Bentley, W.E., and Mark R. Marten, "Proteome Analysis of *Escherichia coli* Cultures Grown under Conditions Relevant in Large-Scale Bioprocesses", AIChE Annual Meeting, Austin, TX, Nov. 2004.

Bentley, W.E., "Towards Programmable Microscale Biomanufactoring" Bioscience Research and Technology Review Day, University of Maryland, College Park (invited presentation in Symposia on Nanotechnology for the Life Sciences), Nov. 2004.

Tsao, C.Y., Wang, L., Hashimoto, Y., DeLisa, M.P., Yang, L., Yi, H., Valdes, J.J., Wood, T.K., and W.E. Bentley, "Rewiring quorum sensing circuitry for enhancing protein quality in *E. coli"*, 229th ACS National Meeting, San Diego, CA, March, 2005.

March, J.C., and W.E. Bentley, "Tuning Eukaryotic Cell Signals with RNAi for Increased Growth and Product Synthesis", 229th ACS National Meeting, San Diego, CA, March, 2005.

Hashimoto, Y., Tsao, C.Y., Yi, H., Wang, L., Yang, L., Wood, T.K., and W.E. Bentley, "S-Adenosylhomocysteine is Converted to *V. harveyi* BB170 Responsive Signal Molecule by *in vitro* Reaction with LuxS", 229th ACS National Meeting, San Diego, CA, March, 2005.

Cresce, A.V., Lewandowski, A.T., Bentley, W.E., and P. Kofinas, "Selective Adsorption of Histidine-tagged Green Fluorescent Protein by a Norbornene Diblock Copolymer", 229th ACS National Meeting, San Diego, CA, March, 2005.

Tao, Y., Bentley, W.E., and T.K. Wood, "Regiospecific Oxidation of Napthalene and Fluorene by Toluene Monooxygenases", 229th ACS National Meeting, San Diego, CA, March, 2005.

Wu, L.Q, Yi, H., Chen, T., Losert, W., English, D., Rubloff, G.W., Ghodssi, R., Bentley, W.E., and G.F. Payne, "Chitosan-mediated and Spatially Selective Assembly of Nanoparticles", 229th ACS National Meeting, San Diego, CA, March, 2005.

Yung, C.Y., Bentley, W.E., and T.A. Barbari, "Engineering "Smart" Cells to Produce Non-invasively Traceable Human Therapeutic Proteins in a Hypoxic Environment for Biohybrid Artificial Organs", 229th ACS National Meeting, San Diego, CA, March, 2005.

Yung, C.Y., Bentley, W.E., and T.A. Barbari, "Producing Traceable Human Therapeutic Proteins Under Hypoxia in Biohybrid Artificial Organs", poster presentation at BMES Annual Meeting, Baltimore, MD, October, 2005

Yung, C.Y., Barbari, T.A., Payne, G.F., and W.E. Bentley, "Traceable hIL2 Secretion from Enzyme Crosslinked Gelatin Cellular Scaffolds", at AIChE annual meeting, Cincinnati, OH, November, 2005.

Powers, M.A., A. Schleunitz, H. Yi, C. Wu, W. E. Bentley, G. F. Payne, R. Ghodssi, "Toward a Biophotonic MEMS Cell Sensor," *SPIE Microtechnologies for the New Millennium*, 9-11 May 2005, Seville, Spain.

Bentley, W.E. "Engineering the Device/Bio Interface", UMBI Minisymposium on Nanobiotechnology, Gaithersburg, January, 2006.

Lewandowski, A., Yi, H., Tsao, C.Y., Powers, M., Ghodssi, R., Rubloff, G., Payne, G., and W.E. Bentley, "Engineering the Biology at a Device Interface: Towards Micromolecular Biomanufacturing", poster at BioChE XIV in Harrison Hot Springs, B.C., Canada, July, 2005

Lewandowski, A.T., Small, D.A., Chen, T., Payne, G.F., and W.E. Bentley, "Tyrosine-based "activatable pro-tag": enzyme-catalyzed protein capture and release", poster at MABEC, Spring, 2005 at Rutgers University, NJ

Bentley, W.E., "Applications of RNA Interference to Enhance Yield in Insect/Insect Cell Systems", oral presentation at Society of Industrial Microbiology Annual Meeting, Baltimore, MD, August, 2006.

Li, Jun, Attila, C., Wood, T.K., Valdes, J.J., and W.E. Bentley, "Dissecting Quorum Signal AI-2 Uptake Regulators in *E. coli*", poster presentation at Society of Industrial Microbiology Annual Meeting, Baltimore, MD, August, 2006.

Li, J., Wang, L., Hashimoto, Y., Tsao, C.Y., Wood, T.K., Valdes, J.J., Zafiriou, E., and W.E. Bentley
"A Stochastic Model of *E. coli* Quorum Sensing Circuit Reveals Alternative Synthesis Pathways", oral presentation at 232nd ACS National Meeting, San Francisco, CA, August, 2006.

Tsao, C-Y, Wang, L., Yi, H., Hashimoto, Y., DeLisa, M.P., Wood, T.K., Valdes, J.J., and W.E. Bentley, "Manipulating Cells by Tuning Quorum Signaling to Enhance Recombinant Protein Production in Escherichia coli", oral presentation at 232nd ACS National Meeting, San Francisco, CA, August, 2006.

Lewandowski, A.T., Yi, H., Rubloff, G.W., Ghodssi, R., Payne, G.F., and W.E. Bentley, "Signal-directed Patterned Assembly of Pathway Enzymes onto Microfabricated Devices", oral presentation at 232nd ACS National Meeting, San Francisco, CA, August, 2006.

Li, J., Wang., L., Hashimoto, Y., Tsao, C.Y., Wood, T.K., and W.E. Bentley, "Systematic Investigation of E. coli Quorum Sensing Cirucuit Reveals Alternative Synthesis Pathways", Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November, 2006.

Hebert, C., Kim, E.J., Kramer, S.F., Valdes, J.J., and W.E. Bentley, "RNA Interference Mediated Knockdown of Genes in Order to Increase Protein Production Using the Baculovirus Expression System", invited poster presentation at the 4th Recombinant Protein Production Meeting – RPP2006: A Comparative View on Host Physiology, Barcelona, Spain, Sepember, 2006.

Bentley, W.E., "Bioengineering – Maryland's Next Great Enterprise", Winston Churchill High School, Potomac, MD, March, 2007.

Yi, H., Rubloff, G.W., Payne, G.F., Bentley, W.E., and J.N. Culver, "Biofabrication with Genetically Modified Viral Nanotemplates", 234th ACS National Meeting, Boston, MA, August, 2007.

Fernandes, R., Tsao, C.Y, Yung, C.W., and W.E. Bentley, "Nanofactories for Synthesis and Delivery of Signaling Molecules: A Tool for Engineering Metabolism", 234th ACS National Meeting, Boston, MA, August, 2007.

Wu, H.C., Shi, X., Lewandowski, A.T., Tsao, C.-Y., Fernandes, R., Hung, C.-W., DeShong, P., Kobatake, E., Payne, G.F., and W.E. Bentley, "A Simple and Generic Immunoplatform for Detecting Histidine Tagged Proteins Based on Biofabrication", 234th ACS National Meeting, Boston, MA, August, 2007.

Yi, H., Rubloff, G.W., Payne, G.F., Bentley, W.E., and J.N. Culver, "Biofabrication With Genetically Modified Viral Nanotemplates", Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah, November, 2007.

Bentley, W.E., Lewandowski, A., Luo, X., Koev, S., Fernandes, R., Wu, H-C., Ghodssi, R. Rubloff, G.W., Payne, G.F., and T.K. Wood, "Probing Cell Signaling Processes Via Biofunctionalized Mems Devices," Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah, November, 2007.

Bentley, W.E., "Signal Transduction – Excerpting Queues and Actuating Pathways in Bacterial Quorum Sensing Systems", oral presentation at Scientific Conference on Chemical & Biological Defense Research, Edgewood, MD, November, 2007.

Hebert, C.G., Valdes, J.J., and W.E. Bentley, "Improving Recombinant Protein Production in the Baculovirus Expression Vector System via RNA Interference-Mediated Silencing of Tn-caspase", 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Dykstra, P., Koev, S., Meyer, M., Luo, X., Rubloff, G.W., Payne, G.F., Bentley, W.E., Ghodssi, R., "The Biopolymer Chitosan for Functionalization of MEMS Sensors", Hilton Head MEMS Workshop 2008, Hilton Head, SC, June 1-5, 2008.

Luo, X.L., Berlin, D.L., Bentley, W.E., Payne, G.F., Ghodssi, R., and G.W., Rubloff, "BioMEMS Study and Design Optimization of In Vitro Enzyme-Controlled Metabolic Pathways", Biomedical Engineering Society annual fall meeting, St. Louis, MO, Oct. 2-4, 2008.

Luo, X., Berlin, D.L., Bentley, W.E., Payne, G.F., Ghodssi, R., and G.W. Rubloff, "Avoiding Parasitic Reactions due to Interconnect Dead Volume and Non-Specific Binding in Microfluidics", AVS 55th Intl. Symp., Boston, MA, Oct. 19-24, 2008.

Hooshangi, S., Tsao, C.Y., and W.E Bentley, "Characterization of AI-2 Uptake Mechanism in *E. coli* Quorum Sensing Circuitry", 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Roy, V., Fernandes, R., Tsao, C.Y., "In vitro LsrK: Toward an AI-2 Phosphorylation Nanofactory that Modulates Bacterial Talk", 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Luo, X.L., Berlin, D.L., Buckhout-White, S.B., Bentley, W.E., Payne, G.F., Ghodssi, R., and G.W. Rubloff, "Minimizing Parasitic Reactions for Enzyme-Controlled Metabolic Pathways Investigated in BioMEMS", MicroTAS 2008, 12th Intl. Conf. on Miniaturized Systems for Chemistry and Life Sciences, San Diego, CA, Oct. 12-16, 2008.

Byrd, C.M., Tsao, C.Y., Sumner, J.J., and W.E. Bentley, "LsrR-mediated Switching of Gene Expression in *E. coli* Based upon Phosphorylation of the Quorum Sensing Signal Molecule, AI-2", 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Tsao, C.Y., Hooshangi, S., Wang, L., Valdes, J.J., and W.E. Bentley, "Developing a True Autoinducible Recombinant Protein Expression Platform by Harnessing Native Quorum Signaling Circuitry in *Escherichia coli*", 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Hung, C.W., Howarth, E.R., Wu, H.C., Brown, A.D., Tsao, C.Y., Kofinas, P., Culver, J.N, and W.E. Bentley, "Silent Packaging for Gene Silencing" Tobacco Mosaic Virus RNAi Delivery," 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Fernandes, R., Luo, X., Rubloff, G.W., and W.E. Bentley, "Deciphering Bacterial Communication Using Multimodular Biological Nanofactories in a Microfluidics Device," 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Koev, S.T., Dykstra, P.H., Rubloff, G.W., Bentley, W.E., Payne, G.F., and R. Ghodssi, "Chitosan for MEMS," *International Conference on Biomedical Electronics and Devices (BIODEVICES)*, pp. 109-112, Porto, Portugal, January 14-17, 2009.

Koev, S.T., Fernandes, R., Bentley, W.E., and R. Ghodssi, "Optical Microcantilever Sensor for Liquid Samples," *IEEE Biomedical Circuits and Systems Conference (Biocas)*, Baltimore, MD, November 20-22, 2008.

Wang, K., Tsao, C.Y., and W.E. Bentley, "Optimization of Autoinducible Protein Expression in *Escherichia coli*", poster presentation at 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Carter, K., and W.E. Bentley, "Exploiting the Potential of the RpoS Phenotype via an Inducible Small RNA Expression System", poster presentation at 236th ACS National Meeting, Philadelphia, PA, August, 2008.

Wu, H.C., and W.E. Bentley, "Tuning Cell Cycle of Insect Cells for Enhanced Protein Production", poster presentation at 236th ACS National Meeting, Philadelphia, PA, August, 2008.

S. T. Koev, R. Fernandes, W. E. Bentley, and R. Ghodssi, "A Microcantilever Sensor with Integrated Optical Readout for Antimicrobial Drug Discovery," *The 15th International Conference on Solid-State Sensors, Actuators, and Microsystems (Transducers '09)*, Denver, CO, June 21-25, 2009.

Koev, S.T., Fernandes, R., Bentley, W.E. and R. Ghodssi, "Microcantilever Sensor Arrays with Built-in Interferometric Readout," *Materials Research Society 2009 Spring Meeting*, San Francisco, CA, April 13-17, 2009.

Roy, V., Fernandes, R., Tsao, C.Y., and W.E. Bentley, "Metabolically Engineering the Quorum Sensing Circuitry to Modulate Bacterial Communication," oral presentation at 238th ACS National Meeting, Washington, DC., August, 2009.

Luo, X.L., Berlin, D.L., Rubloff, G.W., and W.E. Bentley, "*In situ* Biofabrication of Stimuli Responsive Biopolymer Membranes in Microfluidics", oral presentation at 238th ACS National Meeting, Washington, DC., August, 2009.

Wu, H.C., Hebert, C.G., Hung, C.W., and W.E. Bentley, "Tuning Cell Cycle of Insect Cells for Enhanced Protein Production," oral presentation at 238th ACS National Meeting, Washington, DC., August, 2009.

Roy, V., Luo, X.L., Payne, G.F., Rubloff, G.W., and W.E. Bentley, "Using Native AI-2 Processing Enzymes to Disrupt Bacterial Communication in a bioMEMS Device", poster presentation at Annual Meeting of Biomedical Engineering Society, Pittsburgh, PA, September, 2009.

Quan, D., and W.E. Bentley, "Search by Synteny for Homologous Lsr Signaling Modules and Exploring Possible Signaling Patterns of Putative Modules", oral presentation at 2009 Annual Meeting, American Institute of Chemical Engineers, Nashville, TN. November, 2009.

Shi, XW, Tsao, C-Y, Hooshangi, S., Quan, D., Payne, G.F., and W.E. Bentley, "Excerpting Queues and Actuating Pathways of Bacterial Quorum Sensing for Next Generation Sensors and Communications, Chemical and Biological Defense Science and Technology Conference, Dallas, TX, November, 2009.

Byrd, C.M., Xiong, Z., Tsao, C.Y., and W.E. Bentley, "Understanding Mechanistic Basis for QS Signaling via ChIP-Chip Analysis", oral presentation at 239th ACS National Meeting, San Francisco, CA, March, 2010.

Roy, V., Smith, J.A.K., Stewart, J.E., Wang, J., Sintim, O., and W.E. Bentley, "Analogs of Bacterial Signaling Molecule AI-2 as Quorum Quenchers", poster presentation at 239th ACS National Meeting, San Francisco, CA, March, 2010.

Meyer, M.T., Roy, V., Bentley, W.E., and R. Ghodssi, "A Microfluidic Platform for Optical Monitoring of Bacterial Biofilms", oral presentation at 26th Southern Biomedical Engineering Conference, College Park, MD, May, 2010.

Luo, X., Rubloff, G., and W.E. Bentley, "Quantification of Adenine using Chitosan-mediates SERS Substrates", oral presentation at the 26th Southern Biomedical Engineering Conference, College Park, MD, May 2010.

Luo, X., Wu, H.C., Tsao, C.Y., Cheng, Y., Ghodssi, R., Payne, G.F., Rubloff, G.W., and W.E. Bentley, "Micro-sandwich in Microfluidics: 3D Biopolymer Membranes for Cell Assembly", poster presentation at Annual Meeting of the Biomedical Engineering Society, Austin, TX., Oct., 2010.

Terrell, J., Gordonov, T., Wu, H.-C., Tsao, C.Y., Sampey, D., Luo, X., Cheng, Y., Liu, Y., Rubloff, G., Payne, G.F., and W.E. Bentley, "Film Electrodeposition for On-Chip Cell Culture and Analysis at Defined Addresses", oral presentation #80 at 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Bentley, W.E., Wu, H.C., Tsao, C.Y., Valdes, J.J., Payne, G.F., and S. Muro, "Toward a Bacterial Dirigible: Autonomous Localization and Actuation", oral presentation #BIOT155 at 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Servinsky, M.D., Byrd, C.M., Bentley, W.E., and J.J. Sumner, "Understanding Intercellular Signaling in Biofilms in Logistics Fluids", poster #BIOT222 at 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Adams, B.L., Valdes, J.J., and W.E. Bentley, "Modulating Bacterial Signaling Processing Through the Directed Evolution of the AI-2 Global Regulator Protein, LsrR", oral presentation at the 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Roy, V., Smith, J.A.I., Sintim, H.O., and W.E. Bentley, "Altering Communication Networks of Multispecies Microbial Systems by Engineering Signal Transduction", oral presentation at the 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Bauer, R.I., Burrola, B., Sintim, H.O., Losert, W., and W.E. Bentley, "Influence of Autoinducer-2 on E. coli Swimming Motility", oral presentation at 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Quan, D.N. and W.E. Bentley, "Intergenomic Interrogation of Signal Transduction Reveals Horizontal Gene Transfer and Amelioration", poster presentation at 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Gordonov, T., Terrell, J., Wu, H.C., Tsao, C.Y., Sampey, D., Luo, X., Cheng, Y., Liu, Y., Rubloff, G.W., Payne, G.F., and W.E. Bentley, "Enzymatic Assembly and Protein Engineering for Advancing Molecular Detection Techniques", oral presentation at 241st National Meeting of the American Chemical Society, Anaheim, CA, March, 2011.

Terrell, J.L., Wu., H.-C., Tsao, C.-Y., Servinsky, M.D., and W.E. Bentley, "Cell Surveillance of Quorum Sensing Toward Reporting the Presence of Contamination", oral presentation at the 243rd ACS National Meeting, San Diego, CA, March, 2012.

Quan, D.N., and W.E. Bentley, "Quorum Sensing as a Mechanism for the Stable Population Division in Batch Cultures", oral presentation at the 243rd ACS National Meeting, San Diego, CA, March, 2012.

Gordonov, T., Kim, E., Payne, G.F., and W.E. Bentley, "Electric Control of Enzymatic Activity Through Redox Mediators", oral presentation at the 243rd ACS National Meeting, San Diego, CA, March, 2012.

Terrell, J.L., Gordonov, T., Wu., H.-C., Sampey, D., Luo, X., Tsao, C.-Y., Ghodssi, R., Rubloff, G.W., Payne, G.F., and W.E. Bentley, "Biofabrication of On-Chip Bioprocessing Stations Toward Operational Continuity", oral presentation at the 243rd ACS National Meeting, San Diego, CA, March, 2012.

Zargar, A., Raje, K., and W.E. Bentley, "Effect of Quorum-Signaling Molecules on Human Epithelial Cells: Implications for Interkingdom Response and Communication", poster presentation at 2012 Annual Meeting of the Biomedical Engineering Society, Atlanta, GA, October, 2012.

Betz, J.F., Cheng.Y, Tsao, C.-Y., Wu, H.-C., Payne, G.F., Bentley, W.E., and G.W. Rubloff, "Calcium-Alginate-Mediated Cellular Reprogramming in a Microfluidic Device", poster presentation at 2012 Annual Meeting of the Biomedical Engineering Society, Atlanta, GA, October, 2012.

Gordonov, T., Kim, E., Payne, G.F., and W.E. Bentley, "Electric Control of Enzymatic Activity Through Redox Mediators", poster presentation at 2012 Annual Meeting of the Biomedical Engineering Society, Atlanta, GA, October, 2012.

Luo, X., Tsao, C.-Y., Wu, H.-C., Rubloff, G.W., and W.E. Bentley, "Active Interception and Elimination of Bacterial Signaling with Engineered Cell Communities: Towards In Vitro Models of Intestinal Flora", poster presentation at 2012 Annual Meeting of the Biomedical Engineering Society, Atlanta, GA, October, 2012.

Kim, E., Gordonov, T., Liu, Y., Elabd, Y.A., Payne, G.F., and W.E. Bentley, "Bio-based Redox Capacitor to Intercede in Microbe-Electrode Electron Flow", oral presentation at the AIChE Annual Meeting, Pittsburgh, PA, October, 2012.

Terrell, J., Wu, H.C., Tsao, C.-Y., Servinsky, M., and W.E. Bentley, "Synthetic Autoinducer-2 Triggered Expression for Quorum Sensing Surveillance", oral presentation at the AIChE Annual Meeting, Pittsburgh, PA, October, 2012.

Betz, J.F., Cheng, Y., Tsao, C.-Y., Wu, H.-C., Payne, G.F., Bentley, W.E., and G.W. Rubloff, "Calcium-Alginate Mediated Nucleic Acid Delivery in a Microfluidic Device", oral presentation at the AIChE Annual Meeting, Pittsburgh, PA, October, 2012.

Luo, X., Tsao, C.-Y., Wu, H.-C., Rubloff, G.W., and W.E. Bentley, " In-Situ Biofabrication of Spatially Programmed Biofilm Mimics for Direct Observation of Bacterial Signaling", oral presentation at the AIChE Annual Meeting, Pittsburgh, PA, October, 2012.

Zargar, A., and W.E. Bentley, "Effects of Quorum-Signaling Molecules on Human Epithelial Cells: Implications for Interkingdom Response and Communication", oral presentation at the AIChE Annual Meeting, Pittsburgh, PA, October, 2012.

Quan, D.N., and W.E. Bentley, "Coordination of Quorum Sensing with Cell Motion," oral presentation at the AIChE Annual Meeting, Pittsburgh, PA, October, 2012.

Gordonov, T., Zhou, X., Kim, E., Ben-Yoav, H., Ghodssi, R., Payne, G.F., and W.E. Bentley, "An Electrochemical Biosensor for Bacterial Quorum Sensing Molecule Autoinducer-2", poster presentation at the ASM Biodefense and Emerging Diseases Research Meeting, American Society of Microbiology, Washington, DC., Jan., 2014

Zargar, A., Tsao, C.-Y., Quan, D., Wu, H.-C., Carter, K., and W.E. Bentley, "Quorum Interference: 'Bacterial Vacuums' that Block Communication and Reduce Virulence", oral presentation at the ASM Biodefense and Emerging Diseases Research Meeting, American Society of Microbiology, Washington, DC., Jan., 2014

Gordonov, T., Kim, E., Zhou, Y., Cheng, Y., Ben-Yohav, H., Ghodssi, R., Rubloff, G.W., Yin, J-J., Payne, G.F., and W.E. Bentley, "Electronic attenuation of biochemical signal generation", oral presentation at the 247th ACS National Meeting, Dallas, TX, March, 2014.

Bhokisham, N.O., and W.E. Bentley, "Microbial transglutaminase mediated two step enzyme cascade fabrication leading to increased product flux", oral presentation at the 247th ACS National Meeting, Dallas, TX, March, 2014.

Terrell, J.L., Russ, Z., Wu, H.-C., Gupta, A. and W.E. Bentley, "DNA methylation for encoding quorum sensing-inspired cell communication", oral presentation at the 247th ACS National Meeting, Dallas, TX, March, 2014.

Rhoads, M.K., Tsao, C-Y., Terrell, J.L., Wu, H.-C., and W.E. Bentley, "Modulating bacterial communication pathways with quorum quenching capsules", oral presentation at the 247th ACS National Meeting, Dallas, TX, March, 2014.

Zargar, A., Tsao, C.-Y., Quan, D., Wu, H.-C., and W.E. Bentley, "Quorum quenching: Development of "bacterial vacuums" to modulate and control bacterial communication and gene expression", oral presentation at the 247th ACS National Meeting, Dallas, TX, March, 2014.

Bentley, W.E., "Translating Academic Research into Companies & Products – Programs & Reflections", panel member, Lessons Learned from Drugs to Devices: A Pediatric Perspective, 2nd Annual Pediatric Surgical Innovation Symposium, Children's National Health System, Newseum, Washington DC, October, 2014.

Bhokisham, N., Liu, Y., Pakhchanian, H., Payne, G.F., and W.E. Bentley, "Site-Specific and Enzyme-Mediated Modular Construction of Protein Complexes", poster presentation at Annual Meeting of Biomedical Engineering Society, San Antonio, TX, October 2014.

Kim, Y. W., Meyer, M. T., Subramanian, S., Bentley, W. E., and R. Ghodssi, "An enhanced *Pseudomonas aeruginosa* biofilm treatment using an integrated microsystem", poster presentation at *The 18th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, San Antonio, TX, October 2014.

Subramanian, S., Kim, Y., Meyer, M.T., Bentley, W.E., and R. Ghodssi, A real-time bacterial biofilm characterization platform using a microfluidic system, poster presentation at *Technical Digest of the 2014 Solid-State Sensor and Actuator Workshop*, Hilton Head, SC, June 2014.

Tolstaya, E., Kim, Y.W., Chu, S., Gerasopoulos, K, Bentley, W.E., and R. Ghodssi, "An inductive-capacitive sensor for real-time biofilm growth monitoring", oral presentation at AVS 61st International Symposium & Exhibition, Baltimore, MD, November, 2014.

Subramanian, S., Meyer, M.T., Kim, Y.W., Bentley, W.E., and R. Ghodssi, "The development of a valve based microfluidic biofilm reactor for biofilm studies with reliable controls", oral presentation at AVS 61st International Symposium & Exhibition, Baltimore, MD, November, 2014.

Wolfram, C., Luo, X., Wu, H.-C., Tsao, C.-Y., Guo, M., Rubloff, G.W., Bentley, W.E., and H.O. Sintim, "Electroassembled cell populations in microfluidic gradient generators for biomolecule screening", poster presentation at AVS 61st International Symposium & Exhibition, Baltimore, MD, November, 2014.

Gordonov, T., Zhou, X., Tsao, C.-Y., Ueda, H., Kim, E., Payne, G.F., and W.E. Bentley, "Electrochemical monitoring of synthetic biology constructs", oral presentation at 249th ACS National Meeting, Denver, CO., March, 2015.

Zargar, A., Tsao, C.-Y., Quan, D.-Q., Emamian, M., and W.E. Bentley, "Autonomous 'bacterial vacuums' that control communication and enable tunable gene expression", oral presentation at the 249th ACS National Meeting, Denver, CO., March, 2015.

Terrell, J., Wu, H.-C., Tsao, C.-Y., Dunn, A., Payne, G.F., and W.E. Bentley, "DNA Methylation for programming biochemical flux", oral presentation at 249th ACS National Meeting, Denver, CO., March, 2015.

Subramanian, S., Gerasopoulos, K., Sintim, H.O., Bentley, W.E., and R. Ghodssi, "A Bacterial Biofilm Combination Treatment using a Real-Time Microfluidic Platform", poster presentation at *18th International Conference on Solid-State Sensors, Actuators and Microsystems, Transducers*, Anchorage, AK, June 2015.

Bhokisham, N., and W.E. Bentley, "Hierarchical assembly of enzymes leads to novel quorum sensing characteristics in bacteria", oral presentation at Bacteria Material Interactions Conference, Stevens Institute of Technology, New Jersey, NJ, June 2015.

Rhoads, M. and W.E. Bentley, "Chitosan Interaction with the 'Universal' Bacterial Communication Molecule, Autoinducer-2", oral presentation at the BMES 2015 Annual Meeting, Tampa, FL, Oct., 2015

Luo, X., Wolfram, C., Wu, H.C., Bentley, W.E., and G. Rubloff, "Static Gradients Generated with Biofabricated Semi-Permeable Biopolymer Membranes in Microfluidics for Bacterial Chemotaxis Studies", oral presentation at the BMES 2015 Annual Meeting, Tampa, FL, Oct., 2015.

Virgile, C., Kim, E., Payne, G., and W.E. Bentley, "Genetically-Engineered Bacteria for Gastrointestinal Wound Healing", oral presentation at the 2015 Annual Meeting of the AIChE, Salt Lake City, UT, Nov., 2015.