William M. Miller

Chemical and Biological Engineering Department, Northwestern University

March 2024

Personal

Professor Emeritus, Chemical & Biological Engineering, Northwestern University, Evanston, IL.
ORCID identifier: http://orcid.org/0000-0003-0750-6314

Research Interests

My research is focused on sustainability and environmental issues.

• As part of the DOE Urban Integrated Field Laboratory CROCUS (Community Research on Climate & Urban Science) project led by Argonne National Lab and other projects funded by the Walder Foundation and National Science Foundation (NSF), my colleagues and I are working with community partners to install hydrological and biogeochemical sensors in Chicago and its suburbs to quantify the benefits of nature-based solutions for addressing climate change with a focus on mitigating flooding from stormwater.

• The increasing pace of environmental change, especially climate change, exacerbates existing threats to the livelihoods and wellbeing of many Native American nations across the United States. For example, climate change exacerbates the effects that invasive species, mining, and development have on culturally important and environmentally sensitive manoomin (wild rice) and other critical ecosystems that provide food, water, and cultural security for Indigenous Peoples. Working with tribal partners, two NSF-funded tribally-driven projects adopt an integrative framework to synthesize traditional and scientific knowledge to advance innovations in three areas: (1) Environmental Science; (2) Governance; and (3) Community Impact. I co-lead the community engagement and education efforts and contribute to environmental science.

• I am part of the Chicago Wilderness Alliance (CWA) team developing a Climate Action Plan for People and Nature to complement climate action plans developed by the City of Chicago and regional agencies. The CWA is working to address climate change and its impacts in the Chicago Wilderness region by engaging a diverse array of communities and stakeholders to co-create an inclusive and equitable climate strategy to expand the suite of nature-based mitigation and adaptation activities to reduce regional emissions and build climate resilience for nature and people across the CWA Region.

Education

Ph.D. University of California, Berkeley; December 1987.

Chemical Engineering

Thesis: "A Kinetic Analysis of Hybridoma Growth and Metabolism."

Thesis Advisors: Harvey W. Blanch; Charles R. Wilke

S.M. Massachusetts Institute of Technology; February 1975.

Chemical Engineering

Thesis: "The Onset of Drag Reduction of Essentially Monodisperse Poly-cis-isoprenes."

Thesis Advisors: Kenneth A. Smith; Edward W. Merrill

B.S. Lehigh University; May 1973.
Chemical Engineering (Highest Honors)

Honors and Awards

Chair, Board of Trustees, The Nature Conservancy in Illinois (2022-present)

Walder Foundation Resilient by Nature Project Advisory Committee (2020-present)

Cell Culture Engineering Award (ECI, 2018)

Board Trustee, The Nature Conservancy in Illinois (2018-present)

NIGMS Training and Workforce Development Subcommittee – B (TWD-B) Study Section (2017-2019)

Science Advisory Committee, The Nature Conservancy in Illinois (2016-present; Chair, 2019-present)

Editorial Board, *Biotechnology Journal* (2014-2017)

D. F. Ollis Lecture in Biochemical Engineering, North Carolina State University (2009)

Australian Stem Cell Centre Scientific Advisory Board (2009-2011)

Editor, *Biochemical Engineering Journal* (2007-2016)

Area 15c speaker for AIChE Food, Pharmaceutical and Bioengineering Plenary Session (2006)

AIChE Food, Pharmaceutical and Bioengineering Division Service Award (2006)

Fellow, American Association for the Advancement of Science (2006).

Stem Cell Network of Canada Scientific Advisory Board (2005-2008).

Editorial Board: *Biotechnology and Bioengineering* (2003-present).

Fellow, American Institute of Medical and Biological Engineers (2001).

Editorial Advisory Board: *Biotechnology Progress* (2000-present).

Northwestern University Associated Student Government Faculty Honor Roll (1995-1996).

Lilly Biochemistry Grantee (1991).

Presidential Young Investigator (NSF, 1990).

Award for Excellence in Teaching in Chemical Engineering at Northwestern (1988-1989).

Tech Undergrad Council Outstanding Teaching Award in Chemical Engineering (1987-1988).

Distinguished Teaching Assistant; University of California, Berkeley (1982-1983).

Tau Beta Pi and Phi Beta Kappa honorary societies.

Academic Experience

Northwestern University (1987 to present)

Assistant Professor, Chemical Engineering Department (1987 to 1993).

Faculty Member, Robert H. Lurie Comprehensive Cancer Center of Northwestern University (1988 to 2021).

Graduate Program Director, Chemical Engineering Department (1989 to 1994).

Associate Professor, Chemical Engineering Department (1993 to 1999).

Preceptor, Interdisciplinary Biological Sciences Program (1993 to 2021).

Undergraduate Program Director, Chemical Engineering Department (1994 to 1998).

Associate Chair, Chemical Engineering Department (1995 to 1998).

Professor, Chemical and Biological Engineering Department (1999 to 2022).

Chair, Chemical and Biological Engineering Department (2000 to 2005).

Director, Master of Biotechnology Program (2007 to 2019).

Northwestern University Clinical and Translational Sciences Institute "Engineering into Medicine" Mini-Sabbatical (Fall 2010 and Winter 2011).

Faculty Member, Chemistry of Life Processes Institute (2013 to 2021).

Director, T32 NIGMS Predoctoral Biotechnology Training Program (2014 to 2019).

Co-Director, TL1 NCATS Multidisciplinary Postdoctoral Training Program in Child and Adolescent Health (2015 to 2019).

Northwestern-Argonne Institute Mini-Sabbatical (Fall 2015 and Winter 2016).

Affiliated Faculty, Institute for Sustainability and Energy at Northwestern (2016 to present).

Senior Fellow, Northwestern Argonne Institute of Science and Engineering (2017 to 2022).

Director, Center for Engineering Sustainability and Resilience (2019 to 2022).

Affiliated Faculty, Center for Native American and Indigenous Research (2020 to present).

Professor Emeritus, Chemical and Biological Engineering Department (2022 to present).

Massachusetts Institute of Technology (1997)

Visiting Scientist, Chemical Engineering Department (Fall 1997)

University of California, Berkeley (1982-1987)

Research Assistant, Chemical Engineering Department.

Instructor for Biochemical Engineering, Spring 1985.

Industrial Experience

Merck & Co. Inc., West Point, PA (Winter 1998)

Cell Culture Development (Visiting Scientist). Evaluated process modifications and assays for virus production.

Air Products and Chemicals, Inc., Allentown, PA (1976-1982)

Corporate Commercial Development (Acting Program Manager). Coordinated the laboratory and business programs for commercializing Air Products' supercritical fluid extraction technology.

Polymer Chemicals Technology (Principal Process Engineer). Responsible for developing and implementing emulsion polymerization process improvements, and for transferring new products to manufacturing.

Industrial Chemicals R & D (Senior Research Engineer). Responsible for developing a process to recover dinitrotoluene from wastewater.

Rohm and Haas Co., Philadelphia, PA (1974-1976)

Chemical Process Engineering (Process Engineer). Responsible for specialty oligomer and styrene/DVB ion exchange resin process definition, economic analysis, and scale-up.

Research Supervision

Post-Doctoral

Lars K. Nielsen (with E.T. Papoutsakis). Modeling of Hematopoietic Cell Proliferation and Differentiation *Ex Vivo*. 1995-1997.

Larissa A. Wenning (with E.T. Papoutsakis). Modeling and Experimental Analysis of the Effects of Soluble vs. Bound Cytokines on Hematopoiesis. 1997-1999.

Todd A. McAdams (with E.T. Papoutsakis). Large-Scale Production of Neutrophil and Megakaryocyte (Blood Cell) Precursors for Therapeutic Applications. 1997-1998.

Henry Yang (with E.T. Papoutsakis). Chemometric Analysis of Hematopoietic Cell Metabolic Profiles as a Function of Lineage and Stage of Differentiation; Analysis of Megakaryocyte Cultures. 1999-2002.

Rico Gunawan (with P.B. Messersmith, NU Biomedical Engineering). Control and Patterning of Hybrid Bilayer Membrane Lipid Fluidity for use in Stem Cell Expansion. 2004-2007.

Raynauld L. Bishop (with P.B. Messersmith, NU Biomedical Engineering). Synthesis of Biomimetic Lipopeptides and Lipoglycopeptides for Incorporation in Hybrid Bilayer Membranes to Enhance Stem Cell Expansion. 2005-2006.

Frank Xue Jiang. Mechanisms of Nicotinamide-Mediated Polyploidization and Proplatelet Formation. 2009-2010.

Iwona Konieczna. Mechanisms of Nicotinamide-Mediated Polyploidization. 2010-2012.

Joseph S. Uzarski (with J.A. Wertheim). Recellularizing Extracellular Matrix Scaffolds for Kidney Transplants and Disease Models. 2013-2017.

Michael D. DiVito (with J.A. Wertheim). Differentiating Hepatocytes from iPSCs to Treat Pediatric Metabolic Liver Disease. 2017-2020.

Ph.D. Theses Completed

1. Manfred R. Koller (with E.T. Papoutsakis). Development of a Perfusion Bioreactor System for the Expansion of Primitive Human Hematopoietic Progenitor Cells (1992).

2. Sridhar Reddy. Effects of Hyperosmotic Stress on Hybridoma Antibody Production (1993).

3. Andy A. Lin. Cellular Metabolism, Antioxidant Responses and Protein Production in CHO Cells During Hypoxia and Reoxygenation (1993).

4. Stefanos I. Grammatikos (with T.A. Victor, Evanston Hospital). Essential Fatty Acid Processing and Growth Effects in Non-Cancerous, Transformed and Neoplastic Human Mammary Epithelial Cell Lines (1994).

5. Craig E. Sandstrom (with E.T. Papoutsakis). Ex Vivo Expansion of Human Hematopoietic Cells using Better Defined Culture Conditions (1995).

6. Andrew S. Pasternak. Measurement of Trans-Epithelial Electrical Resistance in Perfusion: Development of an in Vitro Ocular Toxicity Testing System (1995).

7. Jennifer A. LaIuppa (Tubridy) (with E.T. Papoutsakis). Defined Culture Conditions for Ex Vivo Expansion of Megakaryocytes and Myeloid Progenitors (1996).
8. Roy Kimura. Effects of Elevated Carbon Dioxide Partial Pressure on Recombinant Chinese Hamster Ovary and Hybridoma Cell Cultures (1996).
9. Nathanael V. Pederson (with R.H. Knop, Evanston Hospital). Formation of Pyrimidine and Fluoropyrimidine Metabolites in Cultured NCI-N-417 Small Cell Lung Cancer Cells: A Study using ^{31}P- and ^{19}F- NMR Spectroscopy (1997).
10. James A. Zanghi (with R.H. Knop, Evanston Hospital). Effects of Cell Culture Conditions on the Polysialylation of the Neural Cell Adhesion Molecule in Chinese Hamster Ovary and Small Cell Lung Cancer Cells (1997).
11. Todd A. McAdams (with E.T. Papoutsakis). The Characterization of Extracellular pH and Medium Osmolality as Important Parameters in the Culture of Human Hematopoietic Cells (1997).
12. Paul C. Collins (with E.T. Papoutsakis). Development of a Stirred Culture System for the Expansion and Characterization of Human Hematopoietic Cells (1997).
13. Sanjay D. Patel (with E.T. Papoutsakis). Scale-up and Optimization of Hematopoietic Cell Cultures for Clinical Applications (2000).
14. Sigma S. Mostafa (with E.T. Papoutsakis). Effect of Culture Oxygen Tension on Human Megakaryocytes: A Phenotypic and Mechanistic Study (2000).
15. Vivian M. deZengotita. Mammalian Cell Responses to Nutrient Deprivation and Elevated Carbon Dioxide Levels: Characterization and Protection Strategies (2000).
16. Diane L. Hevehan (with E.T. Papoutsakis). Regulation of Ex Vivo Granulocytic Kinetics by Oxygen Tension, pH, and Interleukin-3: Experimental and Model Analysis (2001).
17. Albert E. Schmelzer. Effects of Elevated Osmolality and Carbon Dioxide on the Glycosylation of Neural Cell Adhesion Molecule and Monoclonal Antibody: Osmoprotectant Compounds as Mitigating Agents (2001).
18. Dominic C. Chow (with E.T. Papoutsakis). Effects of Soluble and Bound Stem Cell Factor on the Proliferation of Hematopoietic Cells (2003).
19. Tor W. Jensen (with P.B. Messersmith). Controlled High-Affinity Ligand Presentation in Engineered Hybrid Bilayer Membrane Cell Culture Surfaces (2004).
20. Lisa R. Abston (IBiS student; with A. Aiyar, NU Microbiology and Immunology). Effects of Environmental Factors and Gene Expression on Mammalian Cell Growth and Productivity (2004).
21. Deborah E. Pascoe (with E.T. Papoutsakis). Metabolism of Fed-Batch Cultured Chinese Hamster Ovary Cells: Comparative Analysis of Enzymes and Intracellular Metabolites (2005).
22. Yong Chen (with A. Aiyar, NU Microbiology and Immunology). Effects of Culture Environment on Retroviral Vector Production and Transduction (2005).
23. Chi Chen (IBiS student) (with E.T. Papoutsakis). Megakaryocytic Transcriptional Program and Developmental Plasticity (2006).
24. Li Ting Huang (with E.T. Papoutsakis). Transcriptional Analysis of Ex Vivo Granulocyte (Neutrophil) Development (2006).
25. James A. King (with P.B. Messersmith). Cell Culture Systems Inspired by the Hematopoietic Stem Cell Niche (2007).

26. Peter G. Fuhrken (with E.T. Papoutsakis). Genome-Scale Transcriptional Analysis of Megakaryocytic Cell Cultures Reveals Insights into Lineage-Specific Differentiation (2007).
27. Lisa M. Giammona (with E.T. Papoutsakis). Nicotinamide Enhances Primary Human Megakaryocytic Differentiation from Hematopoietic Stem Cells: Phenotypic Characterization and Mechanism of Action (2007).
28. Shara M. Dellatore (with P.B. Messersmith). Strategies for Immobilization of Cell Adhesion Molecule and Cytokine Receptor Ligands: Inspiration from the Cell Membrane and Marine Mussels (2008).
29. A. Sofia Garcia (with P.B. Messersmith). Characterization of Ligand-Presenting Surfaces for Cell Culture Applications: The Effects of Lateral Mobility on Cell Adhesion and Surface Stability (2009).
30. Panagiotis A. Apostolidis (with E.T. Papoutsakis). Role of Tumor Suppressor p53 in Megakaryopoeisis, Platelet Formation and Platelet Function (2010).
31. Swapna Panuganti (with E.T. Papoutsakis). Towards Large-Scale Production of Platelets for Transfusion Based on Ex Vivo Expansion of Megakaryocytes from Hematopoietic Stem Cells (2011).
32. Alaina C. Schlinker. *In vitro* platelet production: Promoting megakaryocyte terminal differentiation, demonstrating platelet functionality, and developing an automated process for platelet harvest (2014).
33. Mark T. Duncan. Towards *ex vivo* platelet production: Mechanistic studies on megakaryocyte lineage commitment and maturation, and new tools for studying the emerging importance of shear stress on platelet release (2015).
34. Teresa A. Deluca. Towards advancing *ex vivo* platelet production: Exploring the role of lysine deacetylases in megakaryopoiesis and mechanisms of megakaryocyte terminal differentiation (2016).
35. Jia J. Wu (with N. Bagheri). Data-Driven Strategies for Optimization of Human Megakaryocyte Differentiation (2019).
36. Andres F. Martinez. Microbioreactor Development and Simulation to Enhance Megakaryocytic Cell Proplatelet Formation (2019).
37. Liliana M. Hernandez Gonzalez (with A.I. Packman). Anthropogenic Impacts, Stormwater Runoff Dynamics and Opportunities for Upscaling Multifunctional Urban Green Spaces Using High-Frequency Sensing (2021).

M.S. Theses Completed

Andrew S. Pasternak. ECM-Associated Cell Lines as Models for Eye and Skin Irritation (1993).

Jennifer A. Tubridy (with E.T. Papoutsakis). Substrates for Improved Hematopoietic Cultures (1993).

Donna M. Tuman. Tissue Model Development for use in a Perfused in Vitro Toxicity Assay (1995).

Sanjay D. Patel (with E.T. Papoutsakis). Improved Substrates and Feeding Protocols for Hematopoietic Cultures (1996).

Marc Horner (with E.T. Papoutsakis and J.M. Ottino). Transport Enhancement in Animal Cell-Containing Cavities (1998).

Kendrick Boardman (BME student with C.M. Waters). Airway Epithelial Cell Barrier Function and Cytoskeletal Alterations due to Oxidative Stress and Cyclic Stretch (1999).

Dominic C. Chow (with E.T. Papoutsakis). Modeling Oxygen Distribution in the Hematopoietic Compartment of Bone Marrow (1999).

Kenneth E. Chapman (BME student with C.M. Waters). Oxidant Damage to and Recovery of Airway Epithelial Barrier Function (2000).

Yu Kwang (with E.T. Papoutsakis). Characterization of Metabolic Patterns of Granulocytic, Monocytic, Erythrocytic, and Megakaryocytic Ex Vivo Expansion Cultures (2001).

Ph.D. Projects in Progress

Vivien A. Rivera (with A.I. Packman). Developing a data resource for urban flooding and green infrastructure by integrating a network of water sensors and rain gauges (2022, anticipated).

Colleen M. O'Brien (with A.I. Packman). Multifunctional Urban Greenspaces (2024, anticipated).

Jordan Gurneau (with A.I. Packman). Integrating environmental sensing with traditional ecological knowledge to help strengthen resilience of Ojibwe nations (2025, anticipated).

M.S. Thesis Projects in Progress

Ry'yan Clark (MS in Plant Biology and Conservation, with L. Egerton-Warburton). Exploring differences between water redistribution across soil profiles by root systems in older vs. younger trees, including the role of mycorrhizal connections (2022, anticipated).

Master of Biotechnology Students Completed

Amy J. Greischar. Signal Transduction in Hematopoietic Cell Lines (2005).

Colin M. Woodard. Characterization of Hybrid Bilayer Membranes (2005).

Eugene W. G. Soo (with E.T. Papoutsakis). Lineage Plasticity in Hematopoietic Cultures (2005).

James V. Cuenca (with E.T. Papoutsakis). In vitro Platelet Activation Assays (2005).

Eric Schall. Preparation and Characterization of Hybrid Bilayer Membranes (2006).

Aaron Kuhl (with E.T. Papoutsakis). Effects of Nicotinamide on Megakaryocyte Differentiation (2006).

Nikhil Khicha (with E.T. Papoutsakis). Lineage Plasticity in Hematopoietic Cultures (2006).

Jan Kemper (with E.T. Papoutsakis). Mechanisms of Nicotinamide-Enhanced Megakaryocytic Maturation (2007).

Ashley Lipinski. Evaluation of the Effects of EVI1 Overexpression on Megakaryocytic Maturation (2009).

Erum Ahmed. Proplatelet Extension by Megakaryocytes Cultured on Protein-Coated Surfaces (2010).

Kerstyn Bryce. Roles of SIRT2 in the Regulation of Megakaryocytic Differentiation and Maturation (2011).

Zachary Mays. High-Throughput Transcription Factor Activity Analysis in Multiple Megakaryocytic Cell Lines (2012).

Nitin Kini. Microbioreactor Development for Analysis of Megakaryocytic Cell Proplatelet Formation and Platelet Release (2013).

Minchang Yi. Cell Line Models to Study Mechanisms Associated with Megakaryocytic Cell Differentiation and Proplatelet Formation (2013).

Brent Bijonowski (with J.A. Wertheim). Bioreactor Development to Support the Recellularization of Decellularized Organs for Liver and Kidney Transplantation (2013).

Khyati Meghani. Effects of pO_2, pCO_2, and Functionalized PEG Hydrogels on Megakaryocytic Cell Expansion and Differentiation in Culture (2014).

Ahmad Malik. Using Transcription Factor Activity Arrays to Evaluate the Effects of SIRT1 on Megakaryocytic and Erythroid Differentiation (2015).

Joseph Magura. Microbioreactor Development for Analyzing the Effects of Shear Stress, Substrate Compliance, and Ligand Presentation on Proplatelet Formation (2015).

Paul R. Weingarden. Modulation of Megakaryocytic Cell Adhesive Ligands and Distribution to Optimize Proplatelet Production (2015).

Richard D. McMahon. Microbioreactor Analysis of the Effects of Shear Stress, Substrate Compliance, and Ligand Presentation on Proplatelet Formation (2016).

Damien Doser. Optimization of microfluidic bioreactor for platelet production (2018).

Afra Siddiqui. Production and analysis of culture-derived megakaryocytes and platelet-like-particles (2019).

Teaching

University of California, Berkeley

Biochemical Engineering (ChE 170 with lab) (Senior/ Graduate) (Spring 1985)

Northwestern University

Process Dynamics and Control (ChE 341; with lab (Junior) (W88, F89, F92, S93, F93, S94, F94)

Dynamics and Control of Chemical and Biological Systems (ChE 341) (Junior) (W20, W22)

Analysis of Chemical Process Systems (mass and energy balances) (ChE 210 with computation lab) (Sophomore/ Junior) (S88, S89, S90, F90, F91)

Chemical Engineering Concepts and Opportunities (new class) (ChE 190) (Freshman) (S89, S90, S95, F03)

Biochemical Engineering (ChE 375) (Senior/ Graduate) (W90, S91, W95, W97, W99)

Cell Culture and Ex Vivo Tissue Engineering (new class) (ChE 479) (Graduate) (S92, S94, S96, S98, S00, S02, W05, F11)

Kinetics and Reactor Engineering (ChE 307) (Junior) (S96, S97, S99, S04)

Engineering Design and Communication (Engg 106–1&2) (Freshman) (W99, S99, S00, S01, S07)

Design Thinking and Communication (Engg 106–2) (Freshman) (S20, S22)

Equilibrium Separations (ChE 212) (Junior) (W00, W03, F06)

Engineering of Chemical and Biological Processes (substantially revised course) (ChE 190) (Freshman) (F03)

Advances in Biotechnology (ChE 478) (Graduate) (W04, S17, S18, S19)

Molecular and Cell Biology for Engineers (ChE 275) (Junior) (W06, W07, W08, W09, W10, W12, W13)

Bioprocess Engineering I: Kinetics, Energetics, and Bioreactor Design (MBIOTECH 476-1) (S08, S09, S10, S11, S12, S13, S14, S15, S16, S17, S18)

Chemical Engineering Laboratory (ChE 342) (Senior) (F20, W21, S21)

Guest Lecturer, Northwestern University

Eukaryotic Cell Biology (Biol 403) (Graduate) (S96)

Advances in Biotechnology (ChE 478) (Graduate) (S02, S03, S05, S06, S09, S10)

Engineering of Chemical and Biological Processes (ChE 190) (Freshman) (F04)

Engineering Design and Communication (IDEA 106-2) (Freshman) (S08)

Molecular and Cell Biology for Engineers (ChE 275) (Junior) (W15, W16)

Responsible Conduct of Research (Gen Engg 519) (Graduate) (W15, S15, Su19)

Bioprocess Engineering I: Kinetics, Energetics, and Bioreactor Design (MBIOTECH 476-1) (S19)

Undergraduate Seminar: Art, Ecology, and Politics (ART_HIST 390) (F19)

Short Courses and Continuing Education

"Technology Reviews." Lecturer. McCormick School of Engineering and Applied Science (MEAS) Corporate Partners Session. Northwestern University, Evanston, IL. October 1988.

"Frontiers in Biotechnology and Bioengineering." Lecturer. MEAS Corporate Partners Session. Northwestern University, Evanston, IL. November 1992.

"Cell Culture and Separations for Cell and Gene Therapies." Co-Director (with E.T. Papoutsakis) and Lecturer. Northwestern University, Evanston, IL. June 1996, 1997, and 1998.

"Bioreactor Process Technology." Lecturer. American Society of Mechanical Engineers Bioprocess Technology Seminars. September 1997, November 1998, October 1999, September 2000, October 2001, and October 2002.

"Cell Culture and Separations for Cell and Gene Therapies." Director (with E.T. Papoutsakis) and Lecturer. American Society of Mechanical Engineers Bioprocess Technology Seminars. September 2000, October 2001, and October 2002.

"Bioreactor Systems: Development, Design, and Operations." Society of Bioprocessing Professionals and ISPE Bioprocessing Institute. Lecturer on "Mammalian Cell Characteristics;" September 2003, September 2004, May 2005, May 2006, May 2007. Lecturer on "Introduction to Cell Therapies;" May 2006, May 2007.

"Teaching, Learning and Technology Workshop." Northwestern University Searle Center for Teaching Excellence, Academic Technologies unit of Information Technology, and University Library. Featured Faculty Lecture on "Blackboard;" August 2007.

"Teaching, Learning and Technology Workshop." Northwestern University Searle Center for Teaching Excellence, Academic Technologies unit of Information Technology, and University Library. Featured Faculty Lecture on student assessment and "Blackboard;" February 2009.

University Service

Northwestern University Committees

Chemical and Biological Safety (1994-1997)

Chemical and Biological Safety Hazard Review (1996-1997)

Advise Provost on Charles Deering McCormick Excellence in Teaching Professorships and Lectureship and Alumnae Teaching Award (1998-2000)

Bioinformatics Task Force (1999-2000)

Vice President for Research Search Committee (2002-2003)

Evanston Life Sciences Research Council (2003-2005)

Planning and Building Committees for Proteomics and Nanobiotechnology Building (2003-2005)

Human Stem Cell Research (2006-2015)

Associate Vice President for Research Integrity Search Committee (2007-2008)

Limited Submissions Advisory Committee Ad Hoc Reviewer (2008)

One Northwestern (1NU) Planning Group (2009-2010)

Presidential Fellowship Review Committee (2015-2016)

University Mentoring Council (2015-present)

Office for Research Integrity Investigation Committee (2017-2018)

Limited Submissions Advisory Committee (2020-2021)

One Book One Northwestern, Faculty Chair (2021-2022); Selection Committee (2021-present)

Strategic Sustainability Plan Academics and Applied Research Working Group (2021-2022)

Northwestern University Center, Program, and Department Committees

Integrated Biological Sciences Program Curriculum (1995-1996)

Lurie Cancer Center Basic Science Program (1995-1998)

Materials and Life Science Facility Cleanroom Safety (1995-1996)

Integrated Biological Sciences Program Graduate Student Recruiting (1996-1997)

Biomedical Engineering Department Faculty Search (1999-2000)

Materials Research Center Administration (2000-2005)

Catalysis Center Administration (2000-2005)

Predoctoral Biotechnology Training Program (NIH) Steering Committee (2004-2014, 2019-2021)

ENH Department of Medicine Gastrointestinal Search Committee (2007-2008)

NUCATS Institute Steering and Governance (2008-2013)

NUCATS Institute Seed Funding Proposal Reviewer (2008-2009)

Searle Center for Teaching Excellence Searle Fellows program mentor for Professor Justin Notestein (2008-2009)

NUCATS Institute Engineering into Medicine Program (2009-2014)

Searle Center for Teaching Excellence Searle Fellows program mentor for Professor Joshua Leonard (2009-2010)

NUCATS Center for Education and Career Development External Advisory Committee (2010-2019)

Lurie Cancer Center Flow Cytometry Core Facility Advisory Board (2011-2019).

Feinberg Stem Cell Core Facility Advisory Board (2011-2013).

Department of Civil and Environmental Engineering Faculty Search Committee (2011-2012).

Predoctoral Biotechnology Training Program (NIH) Director (2014-2019).

Multidisciplinary Postdoctoral Training Program in Child and Adolescent Health (NIH) Co-Director (2015-2019).

NUCATS KL2 Executive Leadership Committee (2015-2019).

Molecular Biosciences Quantitative Systems Biology Master's Program Advisory Board (2016-2019).

Center for Native American and Indigenous Research Faculty Director Search Committee (2022-2023).

McCormick School of Engineering and Applied Science Committees

Teaching and Advising Newsletter (1989-1993)

Graduate Study and Research (1991-1994)

Committee on Our Future (1993-1994)

Technological Institute Building Safety (Chair; 1994-1996)

Engineering First (Freshman/Sophomore curriculum revision) (1994-1997)

Undergraduate Curriculum (1995-1997)

M.S. in Engineering (4+1 Program) (1995-1997)

Promotion and Tenure Review (1999-2000)

Ad Hoc Promotion and Tenure Review (2006-2007, 2011-2012, 2016-2017)

Office of Corporate Relations Associate Director Search (2006-2007)

Promotion and Tenure Review (2006-2008, 2009-2010, 2014-2016, 2018-2020)

Falk Center for Molecular Therapeutics Review Committee (September 2008)

Conflict of Interest (2010-2021)

Master of Science in Analytics Program Internal Advisory Board (2011-2015)

Center for Engineering Sustainability and Resilience, Director (2019-2022)

Center for Engineering Sustainability and Resilience Advisory Board (2022-present).

Chemical and Biological Engineering Department Committees

Building Renovation Planning (1989-1990)

Teaching Facility Planning and Laboratory Improvement (1989-1995)

Graduate Program Director (1989-1994)

Review of Undergraduate Program and Course Content (1989-90, 1993-1997)

Staff Reorganization (1993-1994)

Department Colloquia (1994-1995)

Undergraduate Program Director (1994-1998)

Undergraduate Course Oversight – Biological Sciences and Bioengineering (1998-1999)

Faculty Search, Chair (1999-2000)

Program Review, Chair (2000-2002)

Faculty Search, Chair (2006-2007)

Faculty Search (2007-2008)

Advisor, Certificate in Biotechnology and Biochemical Engineering (2008-2011)

Faculty Search (2009-2010)

Advisor, Minor in Biotechnology and Biochemical Engineering (2011-2019)

Sustainability Committee (2019-2022)

Marketing Committee (2021-2022)

Professional Service

American Institute of Chemical Engineers (AIChE) Food, Pharmaceutical and Bioengineering (FPBE) Division (Group 15)

Area 15C (Biotechnology) Program Coordinator for 1992 and 1993 AIChE Annual Meetings.

Second Vice Chair (1995), First Vice Chair (1996), Chair (1997), and past Chair (1998) of FPBE Division. Initiated (with Robert Kelly) the Division Plenary Session in 1996.

Group 15 representative at 1995 and 1996 AIChE Annual Programming Meetings.

AIChE Nominating Committee, 2003.

Group 15 Director, 2008-2011

Engineering Foundation and Engineering Conferences International (ECI) Conferences

Organizing Committee: Cell Culture Engineering IV (1994), V (1996), VI (1998), VIII (2002), IX (2004), X (2006), XI (2008), XII (2010), and XV (2016).

Meeting Chair (with Richard Schoenfeld, Genzyme): Cell Culture Engineering VII (2000).

Cell Culture Engineering Conferences Steering Committee (2003–present).

Organizing Committee: Scale-Up and Manufacturing of Cell-Based Therapies I (2012), II (2013), III (2014), and IV (2015).

Meeting Chair (with Thomas Brieva, Celgene): Scale-Up and Manufacturing of Cell-Based Therapies V (2017).

Steering Committee: Advancing Manufacture of Cell and Gene Therapies VI (2019).

Society of Bioprocessing Professionals

Board of Directors (2002-2006).

The Nature Conservancy

Illinois Science Advisory Committee (2016-present; Chair, 2019-present)

Illinois Board of Trustees (2018-present; Chair, 2022-present)

Trustee Scientist Network (Co-chair, 2022-present)

Chicago Wilderness Alliance

Climate Change Task Force Green Infrastructure Vision Working Group (2010-2013).

Taking Climate Action Working Group (2022-present)

Climate Action for People and Nature (2022-present)

Editorial

Special Associate Editor: *Biotechnology & Bioengineering* (special issues on bioartificial organs, tissue engineering, cell therapy and gene therapy; volume 50, numbers 4 & 5, 1996).

Associate Editor: *Encyclopedia of Cell Technology* (Wiley; R. Spier, Editor) section on Animal Cell Biology (20 contributors) (1996-1999).

Editorial Advisory Boards: *Biotechnology Progress* (2000-2023); *Biotechnology & Bioengineering* (2003-2024); *Biotechnology Journal* (2014-2017).

Guest Editor: *Biotechnology Progress* (special issue on Cell Culture Engineering VII; Volume 16, Number 5, 2000).

Editor: *Biochemical Engineering Journal* (2007-2016)

Advisory Panels

MIT Biotechnology Process Engineering Center Scientific Advisory Board (1997-1998).

National Research Council Task Group for the Evaluation of NASA's Biotechnology Facility for the International Space Station (1999-2000).

Stem Cell Network of Canada Scientific Advisory Board (2005-2008).

Australian Stem Cell Centre Scientific Advisory Board (2009-2011).

Walder Foundation Resilient by Nature Project Advisory Committee (2020-present).

Department Reviews

Michigan Technological University Department of Chemical Engineering (April 2004).

Chair, External Review Team for the Professional Program in Biotechnology at Texas A&M University (March 2017).

Professional Society Memberships

American Institute of Chemical Engineers.

American Chemical Society.

American Institute of Medical and Biological Engineers, Fellow.

American Association for the Advancement of Science, Fellow.

American Geophysical Union (AGU).

External Thesis Examiner

National University of Singapore (See Lei Hoon, MEng).

University of British Columbia (Eric J. Jervis, PhD; Julie Audet, PhD).

University of Toronto (WeiJia Wang, PhD).

University of New South Wales (Jingling Ji, PhD).

Proposal Reviews

Ad Hoc Reviewer for:

U.S. National Science Foundation (NSF)

U.S. Department of State ISTC Scientific Advisory Committee

British Columbia Health Research Foundation

Australian Research Council

Natural Sciences and Engineering Research Council of Canada

Canadian Institutes of Health Research

NSF Panels and Committees:

Panels for Research Initiation Awards and Young Investigator Awards.

Site visit committee member for Engineering Research Centers (July 1995).

Panel for EPA/NSF program for Technology for a Sustainable Environment; Biological Applications (May 1998).

Panel for Biosystems at the Nanoscale (November 1999).

Panel for Nanotechnology Science and Engineering (Biological Focus) (March 2002).

Panel for NSF CAREER Awards (Biotechnology Focus) (December 2002).

Panel for NSF CAREER Awards (Biotechnology and Bioengineering Focus) (October 2004).

Panel for NSF SBIR/STTR Awards (Bioprocess Enhancement Focus) (September 2007).

Panel for NSF CAREER Awards (Biotechnology, Biochemical and Biomass Engineering Program) (November 2007).

Panel for NSF CAREER Awards (Biotechnology, Biochemical and Biomass Engineering Program) (October 2011).

Panel for NSF CAREER Awards (Biotechnology, Biochemical and Biomass Engineering Program) (September 2013).

NIH Panels and Committees:

Site Visit Team and Special Emphasis Panel member for Research Training Grant Applications (October and November 1995).

National Institute of Diabetes and Digestive and Kidney Diseases Special Emphasis Panel Member (July 2003).

National Institute of Diabetes and Digestive and Kidney Diseases Special Emphasis Panel Member to review R24 Human Embryonic Stem Cell Infrastructure Award applications (April 2004; April 2005).

National Heart Lung and Blood Institute Special Emphasis Panel Member to review K99/R00 Pathway to Independence Award applications (March 2008).

National Heart Lung and Blood Institute Bioreactors for Reparative Medicine SBIR and STTR Proposal Review Panel (March 2015).

National Heart Lung and Blood Institute Bioreactors for Reparative Medicine SBIR and STTR Proposal Review Panel (September 2016).

National Institute of General Medical Sciences Training and Workforce Development Subcommittee – B (TWD-B) Study Section (2017-2019).

Stem Cell Network of Canada Grant Review Panels (February and August 2003; June 2005; June 2008).

Australian Stem Cell Centre Collaborative Stream Review Panel (May 2009).

Manuscript Reviews

Annals of Biomedical Engineering
Annals of the New York Academy of Sciences
Biochemical Engineering Journal
Biomaterials
Biomimetics
Bioprocess Engineering
Biotechnology Advances
Biotechnology and Bioengineering
Biotechnology Journal
Biotechnology Progress
BioTechniques
Blood
British Journal of Haematology
Canadian Journal of Chemical Engineering
Cancer Research
Cell Cycle
Cell-Stem-Cell
Chemical Engineering Education
Current Opinion in Biotechnology
Cytotechnology
Cytotherapy
Environments
Experimental Hematology
FEBS Journal
Journal of Biotechnology
Journal of Cellular Physiology
Land
Langmuir
Nature Protocols
Nutrition and Cancer
PLoS ONE
Science
Stem Cell Research

Stem Cells

Sustainability

Tissue Engineering

Transfusion

Trends in Biotechnology

Technical Sessions Organized and Chaired

"Nutrition and Metabolic Regulation in Animal Cell Culture." ACS National Meeting in Los Angeles, September 1988.

"Metabolic Aspects of Animal Cell Culture." AIChE Annual Meeting in New York City, November 1988.

"New Developments in Mammalian Cell Culture: Reactor Studies." AIChE National Meeting in San Francisco, November 1989.

"Practical Aspects of Industrial Systems." Engineering Foundation Conference on Cell Culture Engineering II in Santa Barbara, CA, December 1989.

"Animal Cell Culture: Research and Engineering I & II." AIChE National Meeting in Los Angeles, November 1991.

"Tissue Engineering II: Reconstruction of Functioning Tissues In Vitro." AIChE National Meeting in Los Angeles, November 1991.

"Physiology of Differentiated Cells in Cell Culture." Engineering Foundation Conference on Cell Culture Engineering III in Palm Coast, FL, February 1992.

"Antibody Production and Application." Engineering Foundation Conference on Biochemical Engineering VIII in Princeton, NJ, July 1993.

"Advances in Animal Cell Culture." AIChE Annual Meeting in St. Louis, November 1993.

"Tissue Engineering and Cell Therapy I&II." ACS Annual Meeting in Anaheim, CA, April 1995.

"Tissue Engineering." AIChE Annual Meeting in Miami Beach, FL, November 1995.

"Tissue Engineering and Cell Therapy I&II." ACS Annual Meeting in New Orleans, LA, March 1996.

"Cell Culture / Fermentation Process Development I&II." ACS Annual Meeting in New Orleans, LA, March 1996.

"Food, Pharmaceutical and Bioengineering Division Plenary Session." AIChE Annual Meeting in Chicago, November 1996.

"Food, Pharmaceutical and Bioengineering Division Plenary Session." AIChE Annual Meeting in Los Angeles, November 1997.

"Stem Cells: Different Systems and Engineering." Engineering Foundation Conference on Cell Culture Engineering VI in San Diego, CA, February 1998.

"Viral Vaccines and Gene Therapy." AIChE Annual Meeting in Reno, November 2001.

"Immortalization, Differentiation, and Cell Death." Engineering Foundation Conference on Cell Culture Engineering VIII in Snowmass, CO, April 2002.

"Viral Vectors for Gene Therapy and Vaccination." Engineering Conferences International Conference on Cell Culture Engineering IX in Cancun, Mexico, March 2004.

"Advances in Bioreactors and Cell Culture: Animal and Insect Cells." AIChE Annual Meeting in Austin, November 2004.

"Physiology and Engineering of Production Cell Lines." Engineering Conferences International Conference on Cell Culture Engineering X in Whistler, British Columbia, April 2006.

"Complex Biological Systems – Tissues, Multicellular Organisms, and Microbial Communities." Engineering Conferences International Conference on Biochemical Engineering XV in Québec City, Canada, July 2007.

"Advances in Cell Culture for Cell Therapies." AIChE Annual Meeting in Salt Lake City, November 2007.

"Poster Session." Engineering Conferences International Conference on Cell Culture Engineering XI in Queensland, Australia April 2008.

"Higher Yields." Cambridge Healthtech Institute PepTalk Conference Bioprocessing track (Pipeline 2) in San Diego, CA, January 2009.

"Biofuels and Bioenergy." Engineering Conferences International Conference on Biochemical Engineering XVI in Burlington, VT, July 2009.

"Emerging Technologies and Applications." Engineering Conferences International Conference on Cell Culture Engineering XII in Banff, Alberta, Canada, April 2010.

"Novel Approaches for Adult Stem Cell Growth and Differentiation." Society for Biological Engineering's 2nd International Conference on Stem Cell Engineering in Boston, MA, May 2010.

"Product Characterization." Engineering Conferences International Conference on Scale-Up and Manufacturing of Cell-Based Therapies I in San Diego, CA, January 2012.

"Pluripotent Stem Cell Expansion, Differentiation and Bioprocessing." Society for Biological Engineering's 3rd International Conference on Stem Cell Engineering in Seattle, WA, April-May 2012.

"Product Definition and Analytics." Engineering Conferences International Conference on Scale-Up and Manufacturing of Cell-Based Therapies II in San Diego, CA, January 2013.

"Non-Protein Products." Engineering Conferences International Conference on Cell Culture Engineering XV in Palm Springs, CA, May 2016.

"Tissue and Stem Cell Engineering." Engineering Conferences International Conference on Biochemical and Molecular Engineering XX in Newport Beach, CA, July 2017.

Invited Lectures at Universities and Companies

1. University of Washington, Chemical Engineering Department, January 1986.
2. Amgen, Inc., Thousand Oaks, CA, November 1986.
3. Columbia University, Chemical Engineering & Applied Chemistry Department, December 1986.
4. The Johns Hopkins University, Chemical Engineering Department, December 1986.
5. Northwestern University, Chemical Engineering Department, February 1987.
6. Yale University, Chemical Engineering Department, February 1987.
7. University of Illinois (Urbana), Chemical Engineering Department, February 1987.

8. Cetus Corporation, Emeryville, CA, December 1989.
9. Weizmann Institute of Science and Biotechnology General, Ltd., Rehovot, Israel, June 1990.
10. Eli Lilly & Company, Fermentation Process R&D, Indianapolis, IN, August 1990.
11. SmithKline Beecham Pharmaceuticals, Biol. Proc. Sci., King of Prussia, PA, January 1991.
12. Procter and Gamble Company, Miami Valley Laboratories, Cincinnati, OH, January 1991.
13. University of Michigan, Chemical Engineering Department, February 1991.
14. University of Calgary, Chemical Engineering Department, September 1991.
15–17. Universidad Nacional Autonoma de Mexico, Biotechnology Institute, Cuernavaca, July 1992 (3 lectures).
18. Northwestern University Cancer Center, State of the Art Series, October 1992.
19. University of Pittsburgh, Chemical & Petroleum Engineering Department, November 1992.
20. Merck Research Laboratories, Bioprocess Development, Rahway, NJ, December 1992.
21. University of British Columbia, Biotechnology Laboratory, January 1993.
22. Abbott Laboratories, Diagnostic Division, Abbott Park, IL, January 1993.
23. Northwestern University, Chemical Engineering Department, January 1993.
24. Eli Lilly & Company, Lilly Research Laboratories, Indianapolis, IN, February 1993.
25. SmithKline Beecham Pharmaceuticals, Biol. Proc. Sci., King of Prussia, PA, March 1993.
26. Procter and Gamble Company, Miami Valley Laboratories, Cincinnati, OH, May 1993.
27. F. Hoffman-LaRoche, Ltd., Department of Microbiology, Basel, Switzerland, June 1993.
28. Swiss Federal Institute of Technology, Institute for Biotechnology, Zurich, June 1993.
29. Northwestern University, Biomedical Engineering Department, November 1993.
30. University of Wisconsin, Department of Chemical Engineering, November 1993.
31. Amgen, Inc., Thousand Oaks, CA, March 1994.
32. Procter and Gamble Company, Miami Valley Laboratories, Cincinnati, OH, February 1995.
33. Northwestern University, Bone Marrow Transplantation Group, May 1995.
34. Northwestern University; Biochemistry, Molecular Biology, and Cell Biology Department faculty, October 1995.
35. Rutgers University, Chemical and Biochemical Engineering Department, October 1995.
36. Merck Research Laboratories, West Point, PA, April 1996.
37. Life Technologies, Inc., Gaithersburg, MD, November 1996.
38. North Carolina State University, Chemical Engineering Department, April 1997.
39. Monsanto (Searle), Inc., St. Louis, MO, May 1997.
40. MIT, Chemical Engineering Department, October 1997.
41. Massachusetts General Hospital, Dept. of Radiation Biology, Edwin L. Steele Laboratory, October 1997.
42. Genetics Institute, Andover, MA, November 1997.
43. MIT, Biotechnology Process Engineering Center, Cambridge, MA, December 1977.

44. St. Elizabeth's Medical Center & Tufts University School of Medicine, Division of Cardiovascular Research, Boston, MA, December 1977.
45. Organogenesis, Inc., Canton, MA, December 1997.
46. Johns Hopkins University, Chemical Engineering Dept., February 1998.
47. Cornell University, Bioengineering Program, March 1998.
48. University of Pennsylvania, Biotechnology Program, March 1998.
49. Merck Research Laboratories, West Point, PA, March 1998.
50. Bayer Corporation, Berkeley, CA, April 1998.
51. University of Toledo, Bioengineering Department, April 1998.
52. Ortec International, New York, NY, May 1998.
53. Wayne State University, Dept. of Chemical Engineering and Materials Science, October 1998.
54. SyStemix, Inc., Palo Alto, CA, February 1999.
55. Georgia Institute of Technology, Bioengineering Program, March 1999.
56. Ohio State University, Chemical Engineering Department, March 1999.
57. Ohio State University, Department of Pathology, June 1999.
58. Response Oncology, Memphis, TN, March 2000.
59. Johns Hopkins University, Chemical Engineering Department, November 2000.
60. Queensland Institute for Medical Research, Brisbane, Australia, July 2001.
61. University of Queensland, Department of Chemical Engineering, July 2001.
62. University of Queensland, Laboratory for Biological Engineering, July 2001.
63. Tulane University, Chemical Engineering Department, January 2002.
64. Merck Research Laboratories, West Point, PA, March 2002.
65. Cell Genesys, Inc., San Diego, CA, August 2002.
66. University of Virginia, Department of Chemical Engineering, January 2003.
67. Case Western Reserve University, Department of Chemical Engineering, October 2003.
68. Florida State University / Florida A&M University Department of Chemical and Biomedical Engineering, October 2004.
69. Northwestern University Medical School, Division of Hematology/Oncology and Robert H. Lurie Cancer Center, Grand Rounds Lecture Series, January 2005.
70. Centocor, Inc. and Global Biologics Supply Chain, LLC, Malvern, PA, January 2005.
71. University of Akron, Chemical Engineering Department, April 2005.
72. University of Maryland, Chemical and Biomolecular Engineering Department, November 2005.

73–75. Agency for Science, Technology, and Research, Biomedical Research Council, Bioinformatics Institute, Singapore, March 2006 (3 lectures).

76. Amgen, Cell Sciences and Technology, Seattle, WA, May 2006.
77. Vanderbilt University, Chemical Engineering Department, January 2007.
78. University of British Columbia, Centre for Blood Research, October 2007.

79. Northwestern University Feinberg Cardiovascular Research Institute, May 2008.

80. North Carolina State University, D. F. Ollis Lecture in Biochemical Engineering, Chemical and Biomolecular Engineering Department, March 2009.

81. University of Alabama at Birmingham, Symposium on Stem Cells at the Interface of Engineering and Medicine, The BioMatrix Engineering and Regenerative Medicine Center, September 2009.

82. Georgia Institute of Technology and Emory University, Department of Biomedical Engineering and Institute for Bioengineering and Bioscience, January 2010.

83. Cellular Dynamics International, Madison, WI, June 2010.

84. Northwestern University Pediatric Hematology/Oncology/Stem Cell Transplant Seminars, June 2010.

85. City College of New York, CUNY, Chemical Engineering Department, October 2010.

86. Case Western Reserve University, Chemical Engineering Department, November 2013.

87. Northwestern University and Argonne National Laboratory Institute of Science and Engineering (NAISE), November 2016.

88. PhD Program in Bioengineering – Cell Therapies and Regenerative Medicine, Instituto de Bioengenharia e Biociências (iBB)/ Instituto Superior Técnico (IST) of Universidade de Lisboa, Instituto de Medicina Molecular (IMM), and Laboratório Associado de Oeiras (LAO), comprising Instituto de Biologia Experimental e Tecnológica (IBET) / Instituto de Tecnologia Química e Biológica (ITQB/UNL) and Centro de Estudos de Doenças Crónicas (CEDOC) of Universidade Nova de Lisboa, Lisbon, Portugal, June 2017.

89. iBET - Instituto de Biologia Experimental e Tecnológica, Oeiras, Portugal, June 2017.

90. Bristol-Myers Squibb, Devens, MA, July 2018.

91. Northeastern Illinois University, Biology Department, November 2022.

92. Southern Illinois University, Environmental Resource and Policy Program, November 2022.

Publications

Refereed Publications

1. "Donor Number Estimation for Oxygen- and Nitrogen-Containing Solvents via Proton NMR Shift of Chloroform," S. Hahn, W.M. Miller, R.N. Lichtenthaler and J.M. Prausnitz, *J. Sol. Chem.,* **14**, 129-137 (1985).

2. "Polymer Biocompatibility -- Effect on Hybridoma Growth and Metabolism," W.M. Miller, A.A. Lin, C.R. Wilke and H.W. Blanch, *Biotechnol. Lett.*, **8**, 463-468 (1986).

3. "Effects of Dissolved Oxygen Concentration on Hybridoma Growth and Metabolism in Continuous Culture," W.M. Miller, C.R. Wilke and H.W. Blanch, *J. Cell. Physiol.*, **132**, 524-530 (1987). PMID: 3654764.

4. "A Kinetic Analysis of Hybridoma Growth and Metabolism in Batch and Continuous Suspension Culture: Effect of Nutrient Concentration, Dilution Rate and pH," W.M. Miller, H.W. Blanch and C.R. Wilke, *Biotechnol. Bioeng*., **32**, 947-965 (1988). PMID: 18587813 (reprinted in 2000 in a special anniversary issue of the journal).

5. "Transient Responses of Hybridoma Metabolism to Changes in the Oxygen Supply Rate in Continuous Culture," W.M. Miller, C.R. Wilke and H.W. Blanch, *Bioprocess Engr.*, **3**, 103-111 (1988).

6. "Transient Responses of Hybridoma Cells to Lactate and Ammonia Pulse and Step Changes in Continuous Culture," W.M. Miller, C.R. Wilke and H.W. Blanch, *Bioprocess Engr.*, **3**, 113-122 (1988).

7. "Transient Responses of Hybridoma Cells to Nutrient Additions in Continuous Culture: I. Glucose Pulse and Step Changes," W.M. Miller, C.R. Wilke and H.W. Blanch, *Biotechnol. Bioeng*., **33**, 477-486 (1989). PMID: 18587939.

8. "The Transient Responses of Hybridoma Cells to Nutrient Additions in Continuous Culture: II. Glutamine Pulse and Step Changes," W.M. Miller, C.R. Wilke and H.W. Blanch, *Biotechnol. Bioeng*., **33**, 487-499 (1989). PMID: 18587940.

9. "A Rapid Method for Counting Cell Nuclei using a Particle Sizer/Counter," A.A. Lin, T. Nguyen and W.M. Miller, *Biotechnol. Techniq.,* **5**, 153-156 (1991).

10. "A Novel Freshman Class to Introduce Chemical Engineering Concepts and Opportunities," W.M. Miller and M.A. Petrich, *Chem. Eng. Education,* **25**, 134-139 (1991).

11. "Reduced Oxygen Tension Increases Hematopoiesis in Long-Term Culture of Human Stem and Progenitor Cells from Cord Blood and Bone Marrow," M.R. Koller, J.G. Bender, W.M. Miller and E.T. Papoutsakis, *Exp. Hematol.,* **20**, 264-270 (1992). PMID: 1544397.

12. "CHO Cell Responses to Low Oxygen: Regulation of Oxygen Consumption and Sensitization to Oxidative Stress," A.A. Lin and W.M. Miller, *Biotechnol. Bioeng.*, **40**, 505-516 (1992). PMID: 18601145.

13. "Effects of Synergistic Cytokine Combinations, Low Oxygen, and Irradiated Stroma on the Expansion of Human Cord Blood Progenitors," M.R. Koller, J.G. Bender, E.T. Papoutsakis and W.M. Miller, *Blood*, **80**, 403-411 (1992). PMID: 1627798.

14. "UDP-N-Acetylhexosamine Modulation by Glucosamine and Uridine in NCI N-417 Variant Small Cell Lung Cancer Cells: ^{31}P NMR Results," N.V. Pederson, R.H. Knop and W.M. Miller, *Cancer Res*, **52**, 3782-3786 (1992). PMID: 1319832.

15. "Beneficial Effects of Reduced Oxygen Tension and Perfusion in Long-Term Hematopoietic Culture," M.R. Koller, J.G. Bender, E.T. Papoutsakis and W.M. Miller, *Annals New York Academy Sci,* **665**: 105-116 (1992). PMID: 1416596.

16. "Modulation of Glutathione Level in CHO Cells: Effects of Oxygen Concentration and Prior Exposure to Hypoxia," A.A. Lin and W.M. Miller, *Annals New York Academy Sci,* **665**: 117-126 (1992). PMID: 1416597.

17. "Determination of Antibody Content in Live versus Dead Hybridoma Cells: Analysis of Antibody Production in Osmotically-Stressed Cultures," S. Reddy, K.D. Bauer and W.M. Miller, *Biotechnol. Bioeng.*, **40**: 947-964 (1992). PMID: 18601202.

18. "Hybridoma Antibody Content and Production Rate in Continuous Culture: Effect of Dilution Rate," S. Reddy and W.M. Miller, *Biotechnol. Lett.*, **14**: 1007-1012 (1992).

19. "Expansion of Primitive Human Hematopoietic Progenitors in a Perfusion Bioreactor System with IL-3, IL-6, and Stem Cell Factor," M.R. Koller, J.G. Bender, W.M. Miller and E.T. Papoutsakis, *Bio/Technology*, **11**: 358-363 (1993). PMID: 7680209.

20. "Production of tPA in Recombinant CHO Cells under Oxygen-Limited Conditions," A.A. Lin, R. Kimura and W.M. Miller, *Biotechnol. Bioeng*., **42**: 339-350 (1993). PMID: 18613018.

21. "Discrimination of Fluorinated Uridine Metabolites in N-417 Small Cell Lung Cancer Cell Extracts via ^{19}F- and ^{31}P-NMR," N.V. Pederson, J.A. Zanghi, W.M. Miller and R.H. Knop, *Mag. Res. Med.,* **31**: 224-228 (1994). PMID: 8133759.

22. "Review: Serum-Free Media for Cultures of Primitive and Mature Hematopoietic Cells," C.E. Sandstrom, W.M. Miller and E.T. Papoutsakis, *Biotechnol. Bioeng*., **43**: 706-733 (1994). PMID: 18615795.

23. "Effects of Abrupt and Gradual Osmotic Stress on Antibody Production and Content in Hybridoma Cells that Differ in Production Kinetics," S. Reddy and W.M. Miller, *Biotechnol. Prog*., **10**: 165-173 (1994). PMID: 7764674.

24. "n-3 and n-6 Fatty Acid Processing and Growth Effects in Neoplastic and Non-Cancerous Human Mammary Epithelial Cell Lines," S.I. Grammatikos, P.V. Subbaiah, T.A. Victor and W.M. Miller, *Br. J. Cancer*, **70**: 219-227 (1994). PMID: 8054269. PMCID: PMC2033515.

25. "Diversity in the Ability of Cultured Cells to Elongate and Desaturate Essential (n-6 and n-3) Fatty Acids," S.I. Grammatikos, P.V. Subbaiah, T.A. Victor and W.M. Miller, *Annals New York Academy Sci.,* **745**: 92-105 (1994). PMID: 7832535.

26. "Diverse Effects of Essential (n-6 and n-3) Fatty Acids on Cultured Cells," S.I. Grammatikos, P.V. Subbaiah, T.A. Victor and W.M. Miller, *Cytotechnology,* **15**: 31-50 (1994). PMID: 7765945.

27. "First-Order Toxicity Assays for Eye Irritation using Cell Lines: Parameters that Affect In Vitro Evaluation," A.S. Pasternak and W.M. Miller, *Fund. Appl. Toxicol.,* **25**: 253-263 (1995). PMID: 7665009.

28. "Loss of Fatty Acid Δ^6 Desaturating Ability in Human Mammary Epithelial Cells that Express an Activated c-Ha-*ras* Oncogene," S.I. Grammatikos, M.J. Harvey, P.V. Subbaiah, T.A. Victor and W.M. Miller, *Int. J. Oncol.,* **6**: 1039-1046 (1995). PMID: 21556637.

29. "Effects of $CD34^+$ Cell Selection and Perfusion on Ex Vivo Expansion of Peripheral Blood Mononuclear Cells," C.E. Sandstrom, J.G. Bender, E.T. Papoutsakis, and W.M. Miller, *Blood,* **86**: 958-970 (1995). PMID: 7542506.

30. "Ex Vivo Expansion of Primitive Hematopoietic Cells for Cellular Therapies: An Overview," T. A. McAdams, C.E. Sandstrom, W.M. Miller, J.G. Bender, and E.T. Papoutsakis, *Cytotechnology,* **18**: 133-146 (1995). PMID: 22358646.

31. "Ex-Vivo Culture Systems for Hematopoietic Cells," P.C. Collins, E.T. Papoutsakis, and W.M. Miller, *Current Opinion Biotechnol.*, **7**: 223-230 (1996). PMID: 8791333.

32. "Measurement of Trans-Epithelial Electrical Resistance in Perfusion: Potential Application for In Vitro Ocular Toxicity Testing," A.S. Pasternak and W.M. Miller, *Biotechnol. Bioeng.,* **50**: 568-579 (1996). PMID: 18627020.

33. "Development of Novel Perfusion Chamber to Retain Nonadherent Cells and its use for Comparison of Human "Mobilized" Peripheral Blood Mononuclear Cell Cultures with and without Irradiated Bone Marrow Stroma," C.E. Sandstrom, W.M. Miller, J.G. Bender, and E.T. Papoutsakis, *Biotechnol. Bioeng.,* **50**: 493-504 (1996). PMID: 18627011.

34. "Hematopoietic Cell Culture Therapies (Part I): Cell Culture Considerations," T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, *Trends Biotechnol.* , **14**: 341-349 (1996). PMID: 8818288.

35. "Effects of Elevated pCO_2 and/or Osmolality on the Growth and Recombinant tPA Production of CHO Cells," R. Kimura and W.M. Miller, *Biotechnol. Bioeng.,* **52**: 152-160 (1996). PMID: 18629861.

36. "Hematopoietic Cell Culture Therapies: II. Clinical Aspects," T.A. McAdams, W.M. Miller, J.N. Winter, and E.T. Papoutsakis, *Trends Biotechnol.*, **14**: 388-396 (1996). PMID: 8987637.

37. "Comparison of Whole-Serum-Deprived Media for the Ex Vivo Expansion of Hematopoietic Progenitor Cells from Cord Blood and Peripheral Blood Mononuclear Cells," C.E. Sandstrom, P.C. Collins, T.A. McAdams, E.T. Papoutsakis, and W.M. Miller, *J. Hematotherapy*, **5**: 461-473 (1996). PMID: 8938518.

38. "Inverse-Signal Analysis with PCA," V.N. Reddy, W.M. Miller, and M.L. Mavrovouniotis, *Chemometrics and Intelligent Laboratory Systems*, **36**: 17-30 (1997).

39. "Evaluation of Cytokines for Expansion of the Megakaryocyte and Granulocyte Lineages," J.A. LaIuppa, E.T. Papoutsakis, and W.M. Miller, *Stem Cells*, **15**: 198-206 (1997). PMID: 9170211.

40. "Glycosylation of CHO-Cell-Derived Recombinant tPA Produced under Elevated pCO_2," R. Kimura and W.M. Miller, *Biotechnol. Prog.,* **13**: 311-317 (1997). PMID: 9190082.

41. "Variations in Culture pH Affect the Cloning Efficiency and Differentiation of Progenitor Cells in Ex Vivo Haemopoiesis," T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, *Br. J. Haematol.*, **97**:889-895 (1997). PMID: 9217193.

42. "Real-Time Method for Determining the Colony-Forming Cell Content of Human Hematopoietic Cell Cultures," P.C. Collins, L.K. Nielsen, C.-K. Wong, E.T. Papoutsakis, and W.M. Miller, *Biotechnol. Bioeng.*, **55**: 693-700 (1997). PMID: 18636579.

43. "Culture Materials Affect *Ex vivo* Expansion of Hematopoietic Progenitor Cells," J.A. LaIuppa, T.A. McAdams, E.T. Papoutsakis, and W.M. Miller, *J. Biomed. Materials Res.*, **36**: 347-359 (1997). PMID: 9260106.

44. "Characterization of Hematopoietic Cell Expansion, Oxygen Uptake, and Glycolysis in a Controlled, Stirred-Tank Bioreactor System," P.C. Collins, L.K. Nielsen, S. Patel, E.T. Papoutsakis, and W.M. Miller, *Biotechnol. Prog.*, **14**: 466-472 (1998). PMID: 9622528.

45. "Stirred Culture of Peripheral and Cord Blood Hematopoietic Cells Offers Advantages over Traditional Static Systems for Clinically Relevant Applications" P.C. Collins, W.M. Miller, and E.T. Papoutsakis, *Biotechnol. Bioeng.* , **59**: 534-543 (1998). PMID: 10099369.

46. "Modeling Ex Vivo Hematopoiesis using Chemical Engineering Metaphors," L.K. Nielsen, E.T. Papoutsakis, and W.M. Miller, *Chem. Eng. Sci.*, **53**: 1913-1925 (1998).

47. "Oxygen Tension Alters the Effects of Cytokines on the Megakaryocyte, Erythrocyte, and Granulocyte Lineages," J.A. LaIuppa, E.T. Papoutsakis, and W.M. Miller, *Exp. Hematol*., **26**: 835-843 (1998). PMID: 9694504.

48. "Ammonia Inhibits Neural Cell Adhesion Molecule (NCAM) Polysialylation in Chinese Hamster Ovary (CHO) and Small Cell Lung Cancer Cells," J.A. Zanghi, T.P. Mendoza, R.H. Knop, and W.M. Miller, *J. Cell. Physiol.*, **77:** 248-263 (1998). PMID: 9766522.

49. "Transport in a Grooved Perfusion Flat-Bed Bioreactor for Cell Therapy Application," M. Horner, W.M. Miller, J.M. Ottino, and E.T. Papoutsakis, *Biotechnol. Prog.*, **14**: 689-698 (1998). PMID: 9758657.

50. "pH is a Potent Modulator of Erythroid Differentiation," T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, *Br. J. Haematol.*, **103**: 317-325 (1998). PMID: 9827900.

51. "The Role of Nucleotide Sugar Pools in the Inhibition of NCAM Polysialylation by Ammonia," J.A. Zanghi, T.P. Mendoza, A.E. Schmelzer, R.H. Knop, and W.M. Miller, *Biotechnol. Prog.*, **14**: 834-844 (1998). PMID: 9841644.

52. "Population Balance Model of In Vivo Neutrophil Formation Following Bone Marrow Rescue Therapy," L.K. Nielsen, J. Bender, W.M. Miller, and E.T. Papoutsakis, *Cytotechnol.*, **28**: 157-162 (1998). PMID: 19003417. PMCID: PMC3449838.

53. "Effects of CO_2 and Osmolality on Hybridoma Cells: Growth, Metabolism, and Monoclonal Antibody Production," V.M. deZengotita, R. Kimura, and W.M. Miller, *Cytotechnol.*, **28**: 213-227 (1998). PMID: 19003422. PMCID: PMC3449846.

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6. "Bone Marrow Niche-Inspired, Multi-Phase Production of High-Ploidy Megakaryocytic Cells: Potential Applications for Cellular Therapies and Platelet Transfusions," S. Panuganti, and W.M. Miller, *Journal of the Robert H. Lurie Cancer Center of Northwestern University*, **13**(2): 37-41 (2010).

7. "Sustainable Urban Systems: Predictive, Interconnected, Resilient, and Evolving (SUSPIRE)," W.M. Miller and J.B. Dunn, NSF-funded Sustainable Urban Systems workshop report, available at https://doi.org/10.21985/n2-3mvx-m804 (2019).

8. "An Assessment of the Impacts of Climate Change in Illinois; 45 authors including W.M. Miller; D. Wuebbles, J. Angel, K. Petersen, and A.M. Lemke (Eds.); The Nature Conservancy, Illinois; https://doi.org/10.13012/B2IDB-1260194_V1 (2021).

9. "Building Material Selection and Use: An Environmental Guide (2nd Edition)," M. Hettiarachchi, V. Dwivedi, W.M. Miller, S.H. Carr, J.B. Dunn, M.M. McMahon, A. Van Breda; World Wildlife Fund and Northwestern University; https://doi.org/10.21985/n2-139p-gw08 (2021).

Invited Presentations at Technical Meetings and Conferences

1. "NMR Analysis of Perfused Lung Cancer Cells," N.V. Pederson, R.H. Knop and W.M. Miller (speaker), paper #O35, Engineering Foundation Conference on Cell Culture Engineering III, Palm Coast, FL, February 1992.

2. "Expansion of Hematopoietic Progenitor Cells," W.M. Miller (speaker), M.R. Koller, E.T. Papoutsakis and J.G. Bender, poster #22, National Institute of General Medical Sciences (NIH) conference on Research Opportunities in Biomolecular Engineering: the Interface between Chemical Engineering and Biology, Washington, DC, December 1992.

3. "Effects of Growth Factors and the Culture Environment on Hematopoiesis," M.R. Koller, C.E. Sandstrom, E.T.Papoutsakis, J.G. Bender, and W.M. Miller (speaker), Engineering Foundation Conference on Biochemical Engineering VIII, Princeton, July 1993.

4. "Ex vivo Expansion of Hematopoietic Progenitor Cells," W.M. Miller (speaker), M.R. Koller, C.E. Sandstrom,E.T. Papoutsakis and J.G. Bender, American Society of Pediatric Hematology/Oncology Annual Meeting, Chicago, September 1993.

5. "Diverse Effects of Fatty Acids and Lipids on Cultured Cells," W.M. Miller (speaker), S.I. Grammatikos, P.V. Subbaiah, and T.A. Victor, Engineering Foundation Conference on Cell Culture Engineering IV, San Diego, March 1994.

6. "Bioreactors for Expansion of Hematopoietic Progenitor Cells," W.M. Miller (speaker), M.R. Koller, C.E. Sandstrom, E.T. Papoutsakis and J.G. Bender, XI Congress of the International Society for Artificial Cells, Blood Substitutes, and Immobilization Technology, Boston, July 1994.

7. "Impact of Hypoxia and Elevated pCO_2 on Recombinant Protein Production," W.M. Miller (speaker) and R. Kimura, Engineering Foundation Conference on Biochemical Engineering IX, Davos, Switzerland, May 1995.

8. "Control of Hematopoietic Progenitor Cell Expansion Ex Vivo," W.M. Miller (speaker), C.E. Sandstrom, J.A. LaIuppa, T.A. McAdams, P.C.Collins, S.D. Patel, and E.T. Papoutsakis,

Engineering Foundation Conference on Cell Culture Engineering V, San Diego, January/February 1996.

9. "Ex Vivo Blood Stem Cell Graft Engineering," workshop on Blood Stem Cell Transplants at the Keystone Symposia Conference on Blood Cell and Bone Marrow Transplants, Keystone, CO, January 1996.

10. "Bioreactor Development for Control of Hematopoietic Progenitor Cell Expansion and Differentiation Ex Vivo," W.M. Miller (speaker), C.E. Sandstrom, J.A. LaIuppa, T.A. McAdams, P.C. Collins, and E.T. Papoutsakis, Sixth Annual Malnati Symposium in the Clinical Sciences, "Hematopoietic Stem-Cell Transplantation: Advances and Controversies," Robert H. Lurie Cancer Center, Northwestern University, Chicago, July 1996.

11. "Controlled Expansion of Hematopoietic Progenitor Cells for Cell Therapies," W.M. Miller (speaker), J.A. LaIuppa, T.A. McAdams, P.C. Collins, and E.T. Papoutsakis, Colorado Biotechnology Symposium Plenary Session, Boulder, September 1997.

12. "Ex Vivo Production of Hematopoietic Progenitor and Post-Progenitor Cells for Transplantation Therapies," W.M. Miller (speaker), J.A. LaIuppa, T.A. McAdams, P.C. Collins, and E.T. Papoutsakis, Keystone Symposia Conference on Tissue Engineering, Keystone, CO, January 1998.

13. "Regulation of NCAM Polysialylation by pCO_2 and pH in Culture," J.A. Zanghi, T.P. Mendoza, A.E. Schmelzer, R.H. Knop, and W.M. Miller (speaker), Engineering Foundation Conference on Cell Culture Engineering VI, San Diego, February 1998.

14. "Oxygen Tension and pH Modulate Hematopoietic Progenitor Cell Proliferation and Differentiation," W.M. Miller (speaker), D.L. Hevehan, S.S. Mostafa, and E.T. Papoutsakis, Gordon Conference on Comparative Hematopoiesis, the Tilton School, NH, August 1999.

15. "Bioreactor Design Considerations for Cell Therapies and Tissue Engineering," W.M. Miller (speaker), International Technology Research Institute World Technology (WTEC) Division Workshop on Tissue Engineering Research in the United States, Bethesda, MD, June 2000.

16. "Environmental Effects on Cell Physiology and Metabolism: Response to Elevated pCO_2," W.M. Miller (speaker), V.M. deZengotita, A.E. Schmelzer, and Lisa R. Abston, 17th European Society for Animal Cell Technology (ESACT) Meeting, Tylösand, Sweden, June 2001.

17. "Stromal Cell Mimic for Presentation of Hematopoietic Stem Cell Adhesion Molecule Ligands," W.M. Miller (speaker), T.W. Jensen, B.-H. Hu, S.M. Dellatore, and P.B. Messersmith, Engineering Conferences International Conference on Biochemical Engineering 13, Boulder, CO, July 2003.

18. "Environmental Effects in Cell Culture for Recombinant Protein and Viral Vector Production," W.M. Miller (speaker), V.M. deZengotita, A.E. Schmelzer, L.R. Abston, and Y. Chen, Society for Industrial Microbiology Recent Advances in Fermentation Technology V, St. Petersburg, FL, November 2003.

19. "Influence of the Cell Culture Environment on the Amount and Quality of Proteins and Viral Vectors Produced in Mammalian Cells," W.M. Miller, AIChE Chicago Chapter Symposium, Chicago, IL, April 2005.

20. "Regulation of Human Hematopoietic Progenitor Cell Differentiation in Culture," W.M. Miller (speaker), L.T. Huang, P.G. Fuhrken, L.M. Giammona, C. Paredes, and E.T. Papoutsakis, Engineering Conferences International Conference on Cell Culture Engineering 10, Whistler, British Columbia, April 2006.

21. "The Growing Importance of Biology in Chemical Engineering," W.M. Miller, Great Lakes Chinese-American Chemical Society Annual Conference, Evanston, IL, May 2006.

22. "Characterization and Regulation of Hematopoietic Stem Cell Differentiation in Culture, " W.M. Miller, FPBE Division Plenary Session, AIChE Annual Meeting, San Francisco, CA, November 12-17, 2006.

23. "Nicotinamide (Vitamin B3) Increases the Ploidy and Proplatelet Production of Human Megakaryocytes, " W.M. Miller (speaker), L.M. Giammona, P.G. Fuhrken, E.T. Papoutsakis, Advances in Biochemical Engineering: Honoring Harvey Blanch II, AIChE Annual Meeting, San Francisco, CA, November 12-17, 2006.

24. "Characterization and Modulation of Megakaryocytic Differentiation, " W.M. Miller, Chicago Hematopoiesis and Leukemia Group, August 30, 2007.

25. "Towards Culture-Derived Platelet Production from Blood Stem Cells," W.M. Miller (speaker), L.M. Giammona, S. Panuganti, and E.T. Papoutsakis, Engineering Conferences International Conference on Cell Culture Engineering 11, Queensland, Australia, April 2008.

26. "Quantifying and Modulating Cell Growth, Death, Metabolism, and Product Fromation," W.M. Miller, Featured Presentation in Higher Yields session, Cambridge Healthtech Institute PepTalk Conference Bioprocessing track (Pipeline 2), San Diego, CA, January 2009.

27. "Progress towards Culture-Derived Platelet Production from Blood Stem Cells," W.M. Miller, S. Panuganti, and E.T. Papoutsakis, Engineering Conferences International Conference on Biochemical Engineering 16, Burlington, VT, July 2009.

28. "Bioprocess-Focused Professional Masters Program in Biotechnology," W.M. Miller, I.V. Kourkine, P.A. Felse, and B. Lane, Engineering Conferences International Conference on Biochemical Engineering 16, Burlington, VT, July 2009.

29. "Progress towards Culture-Derived Platelet Production from Blood Stem Cells (plenary lecture)," W.M. Miller, S. Panuganti, and E.T. Papoutsakis, 2010 International Symposium on Advanced Biological Engineering, Beijing, China, July 2010.

30. "Progress towards Culture-Derived Platelet Production from Blood Stem Cells," AIChE Chicago Section, Evanston, IL, April 2012.

31. "*Ex Vivo* Platelet Production from Hematopoietic Stem Cells," 14th Annual Canadian Blood Services International Symposium: Intersecting Worlds of Transfusion and Transplantation Medicine, Toronto, Ontario, Canada, September 2016.

32. “Influence of the Culture Environment on Hematopoietic Stem and Progenitor Cell Expansion and Megakaryocytic Differentiation,” World Stem Cell Summit, West Palm Beach, FL, December 2016.

33. “Intelligent Environmental Sensing at The Nature Conservancy’s Emiquon Preserve,” R. Sankaran and W.M. Miller, 18th Annual Emiquon Science Symposium, Virtual, March 2024.

Contributed Presentations at Technical Meetings

1. "Kinetics of Hybridoma Growth and Antibody Production," W.M. Miller, H.W. Blanch and C.R. Wilke, paper #41a, AIChE National Meeting, Chicago, November 1985.

2. "Kinetic Analysis of Hybridoma Growth in Continuous Suspension Culture," W.M. Miller, H.W. Blanch and C.R. Wilke, MBTD paper #90, ACS National Meeting, Anaheim, September 1986.

3. "Kinetic Analysis of Transient Responses in Continuous Suspension Culture," W.M. Miller, C.R. Wilke and H.W. Blanch, MBTD paper #149, ACS National Meeting, New Orleans, September 1987.

4. "Hybridoma Transient Responses to Nutrient Pulse and Step Changes in Continuous Culture. Implications for Metabolic Regulation," W.M. Miller, C.R. Wilke and H.W. Blanch, paper #160f, AIChE Annual Meeting, New York City, November 1987.

5. "Transient and Steady-State Responses in Continuous Hybridoma Culture," W.M. Miller, C.R. Wilke and H.W. Blanch, MBTD paper #128, ACS National Meeting, Los Angeles, September 1988.

6. "A Novel Freshman Class to Introduce Chemical Engineering Concepts and Opportunities," W.M. Miller, M.A. Petrich and B. Wendrow, paper #131g, AIChE National Meeting in San Francisco, November 1989.

7. "Effects of Environmental Stress on Hybridoma Antibody Production and Metabolism," S. Reddy and W.M. Miller, paper #33i, AIChE National Meeting in San Francisco, November 1989.

8. "Animal Cell Responses to Heat Shock and Nutrient Deprivation in Batch and Continuous Culture," A.A. Lin, N.V. Pederson and W.M. Miller, paper #T13, Engineering Foundation Conference on Cell Culture Engineering II, Santa Barbara, December 1989.

9. "Cellular Metabolism under low P_{O2} Conditions in a Continuous-Flow Bioreactor," A.A. Lin and W.M. Miller, BIOT paper #56, ACS National Meeting, Washington, D.C., August 1990.

10. "In vitro Murine Bone Marrow Cultures: Semi-Batch versus Continuously Perfused Operation," M.R. Koller, J.G. Bender, K.L. Unverzagt, W.M. Miller and E.T. Papoutsakis, paper #256h, AIChE National Meeting, Chicago, November 1990.

11. "Cell Responses to a Gradual Decrease in Glucose Concentration," N.V. Pederson and W.M. Miller, paper #98c, AIChE National Meeting, Chicago, November 1990.

12. "Antibody Production and Metabolism in Stressed Hybridoma Cultures," S. Reddy and W.M. Miller, paper #47f, AIChE National Meeting, Chicago, November 1990.

13. "CHO Cell Responses to Hypoxia and Recovery: Regulation of Oxygen Consumption and Sensitization to Hyperoxia," A.A. Lin and W.M. Miller, poster #A-9, Engineering Foundation Conference on Biochemical Engineering VII, Santa Barbara, March 1991.

14. "Beneficial Effects of Reduced Oxygen Tension and Perfusion in Long-Term Hematopoietic Culture," M.R. Koller, J.G. Bender, W.M. Miller and E.T. Papoutsakis, poster #B-10, Engineering Foundation Conference on Biochemical Engineering VII, Santa Barbara, March 1991.

15. "Identification and Regulation of UDP-N-Acetylhexosamines in Small-Cell Lung Cancer Cells via ^{31}P NMR," N.V. Pederson, R.H. Knop and W.M. Miller, paper #1074, Society of Magnetic Resonance in Medicine Annual Meeting, San Francisco, August, 1991.

16. "Enhancement of In Vitro Human Hematopoiesis with Synergistic Growth Factors and Perfusion under Low Oxygen Tension," M.R. Koller, J.G. Bender, W.M. Miller and E.T. Papoutsakis, paper #259g, AIChE National Meeting, Los Angeles, November 1991.

17. "CHO Cell Responses to Hypoxia and Anoxia: Metabolic Effects and Sensitization to Hyperoxia," A.A. Lin and W.M. Miller, paper #273a, AIChE National Meeting, Los Angeles, November 1991.

18. "Effects of Environmental Stress on Intracellular Antibody Content and Synthesis Rate in Hybridoma Cells," S. Reddy and W.M. Miller, paper #263c, AIChE National Meeting, Los Angeles, November 1991.

19. "Expansion of Human Hematopoietic Progenitors with Synergistic Cytokine Combinations in a Perfusion Bioreactor," M.R. Koller, J.G. Bender, W.M. Miller and E.T. Papoutsakis, paper #CE302, Keystone Symposia Conference on Tissue Engineering, Keystone, CO, April 1992.

20. "Effects of Hypoxia on Recombinant tPA Production," A.A. Lin and W.M. Miller, BIOT paper #82, ACS National Meeting, San Francisco, April 1992.

21. "Identification and Regulation of UDP-N-Acetylhexosamines (UDP-NAH) in Small Cell Lung Cancer: ^{31}P NMR Results," R.H. Knop, N.V. Pederson and W.M. Miller, poster #103, 83rd Annual Meeting of the American Association for Cancer Research, San Diego, May 1992.

22. "Effects of ω-3 and ω-6 Fatty Acids on the Growth of the MCF-7 Breast Cancer Cell Line," S.I. Grammatikos, T.A. Victor and W.M. Miller, paper #152b, AIChE National Meeting, Miami Beach, November 1992.

23. "In Vitro Assays for Eye and Skin Irritation based on ECM-Associated Cell Lines," A.S. Pasternak and W.M. Miller, paper #151a, AIChE National Meeting, Miami Beach, November 1992.

24. "Antibody Synthesis Rates and Intracellular Content in pH- and Osmotically-Stressed Hybridoma Cultures," S. Reddy and W.M. Miller, paper #157i, AIChE National Meeting, Miami Beach, November 1992.

25. "Dynamics of High-Energy Pyrimidine Metabolites in Perfused Lung Cancer Cells using ^{31}P-NMR Spectroscopy," N.V. Pederson, R.H. Knop and W.M. Miller, paper #158g, AIChE National Meeting, Miami Beach, November 1992.

26. "Production of tPA under Low Oxygen Conditions," A.A. Lin and W.M. Miller, paper #162b, AIChE National Meeting, Miami Beach, November 1992.

27. "Expansion of Human Hematopoietic Progenitor Cells in a Perfusion Bioreactor System with IL-3, IL-6, and Stem Cell Factor," M.R. Koller, J.G. Bender, W.M. Miller and E.T. Papoutsakis, American Society of Hematology 34th Annual Meeting, Denver, December 1992, *Blood,* **80** (Supplement 1): 174a (1992).

28. "Development of Serum-Free Media for Culturing Primitive Human Hematopoietic Cells," C.E. Sandstrom, W.M. Miller, J.G. Bender and E.T. Papoutsakis, ACS National Meeting, Denver, March 1993.

29. "n-3 and n-6 Fatty Acid Incorporation, Processing and Effects on the Growth of Breast Cancer Cells," S.I. Grammatikos, P.V. Subbaiah, T.A. Victor, and W.M. Miller, First International Congress of the International Society for the Study of Fatty Acids and Lipids, Lugano, Switzerland, June 1993.

30. "ω-3 Fatty Acid Incorporation, Processing and Inhibition of Breast Cancer Cell Growth," W.M. Miller, S.I. Grammatikos, P.V. Subbaiah and T.A. Victor, Engineering Foundation Conference on Biochemical Engineering VIII, Princeton, July 1993.

31. "Differential Effects of Essential Fatty Acids on Normal and Cancerous Mammary Epithelial Cells," S.I. Grammatikos, P.V. Subbaiah, T.A. Victor, and W.M. Miller, paper #115g, AIChE National Meeting, St. Louis, November 1993.

32. "Ex Vivo Expansion of Primitive Human Hematopoietic Cells under Perfusion Conditions," E.T. Papoutsakis, C.E. Sandstrom, W.M. Miller, and J.G. Bender, Keystone Symposium on Tissue Engineering, Taos, New Mexico, February 1994.

33. "Perfusion Culture of Nonadherent Hematopoietic Cells," C.E. Sandstrom, W.M. Miller, J.G. Bender and E.T. Papoutsakis, ACS National Meeting, San Diego, March 1994.

34. "Perfused ECM-Associated Cell Lines as a Model for Eye Irritation," A.S. Pasternak and W.M. Miller, ACS National Meeting, San Diego, March 1994.

35. "n-3 and n-6 Fatty Acid Incorporation, Processing and Effects on the Growth of Metastatic and Non-Cancerous Human Mammary Epithelial Cell Lines in Culture," S.I. Grammatikos, P.V. Subbaiah, T.A. Victor and W.M. Miller, abstract #625, 85th Annual Meeting of the American Association for Cancer Research, San Francisco, March 1994.

36. "Basement Membrane-Induced Mammary Gland Morphogenesis and Differentiation of Human Mammary Epithelial Cells Immortalized by SV40 Large T Antigen," T.A. Victor, M. Michaels, S. Cofer, W.M. Miller, K. Rundell, H. Kleinman, S.I. Grammatikos, M. Harvey, R. Knop, and C. Gatburn, abstract #203, 85th Annual Meeting of the American Association for Cancer Research, San Francisco, March 1994.

37. "Enhanced Recruitment of Pyrimidine Salvage Pathways in N417 Small Cell Lung Cancer Extracts via ^{19}F NMR and ^{31}P NMR," R.H. Knop, N.V. Pederson, W.M. Miller, J.A. Zanghi, T.A. Victor, A. Bergman and J. Guerrieri, abstract #2685, 85th Annual Meeting of the American Association for Cancer Research, San Francisco, March 1994.

38. "Ex Vivo Expansion of Primitive Hematopoietic Cells under Perfusion Conditions for Cellular Therapies," E.T. Papoutsakis, C.E. Sandstrom, W.M. Miller, and J.G. Bender, joint ESACT/JAACT, Veldhoven, The Netherlands, September 1994.

39. "Effects of Decreased Oxygen Consumption and High CO_2 Levels on the Secretion and Quality of Recombinant tPA in CHO Cells," R. Kimura and W.M. Miller, paper #53h, AIChE National Meeting, San Francisco, November 1994.

40. "Expansion of Hematopoietic Progenitors and Mature Megakaryocytes for Transplantation," J.A. LaIuppa, E.T. Papoutsakis, and W.M. Miller, paper #45c, AIChE National Meeting, San Francisco, November 1994.

41. "Effect of CD34 Selection on Ex Vivo Expansion of Mobilized Blood Mononuclear Cells," C.E. Sandstrom, E.T. Papoutsakis, J.G. Bender and W.M. Miller, abstract 398, American Society of Hematology Annual Meeting, Nashville, December 1994.

42. "Effects of Stroma and Perfusion on Ex Vivo Expansion of Mobilized Blood Mononuclear Cells," C.E. Sandstrom, S.D. Patel, E.T. Papoutsakis, J.G. Bender and W.M. Miller, abstract 1982, American Society of Hematology Annual Meeting, Nashville, December 1994.

43. "Loss of Fatty Acid Delta-6-Desaturation Ability of MCF-10A Cells due to Malignant Transformation by the Mutated c-Ha-ras Oncogene," T.A. Victor, S.I. Grammatikos, P.V. Subbaiah, M.J. Harvey, and W.M. Miller, abstract #1087, 86th Annual Meeting of the American Association for Cancer Research, Toronto, March 1995.

44. "Effects of Essential Fatty Acids on Epidermal Growth Factor Receptor Tyrosine Autophosphorylation," T.A. Victor, S.I. Grammatikos, R. Hays, M. Webb, M.J. Harvey, and W.M. Miller, abstract #323, 86th Annual Meeting of the American Association for Cancer Research, Toronto, March 1995.

45. "In Vitro Toxicity Testing of Epithelial Cell Lines in Perfusion: Applications in Modeling Corneal Irritation," A.S. Pasternak and W.M. Miller, ACS National Meeting, Anaheim, April 1995.

46. "Effects of $CD34^+$ Cell Selection on Ex Vivo Expansion of Peripheral Blood Mononuclear Cells in a Perfused Bioreactor," C.E. Sandstrom, E.T. Papoutsakis, J.G. Bender and W.M. Miller, ACS National Meeting, Anaheim, April 1995.

47. "Perfusion Culture of Peripheral Blood Mononuclear Cells with and without a Stromal Cell feeder Layer," C.E. Sandstrom, E.T. Papoutsakis, J.G. Bender and W.M. Miller, Engineering Foundation Conference on Biochemical Engineering IX, Davos, Switzerland, May 1995.

48. "Effects of Ammonia and Carbon Dioxide on Polysialylation of the Neural Cell Adhesion Molecule," J.A. Zanghi, R.H. Knop, and W.M. Miller, paper #203f, AIChE National Meeting, Miami Beach, November 1995.

49. "pH Effects on Hematopoietic Cell Growth and Differentiation," T.A. McAdams, E.T. Papoutsakis, and W.M. Miller, paper #230h, AIChE National Meeting, Miami Beach, November 1995.

50. "Measurement of Trans-Epithelial Electrical Resistance in Perfusion: Application for In Vitro Ocular Toxicity Testing," A.S. Pasternak and W.M. Miller, paper #231c, AIChE National Meeting, Miami Beach, November 1995.

51. "Polymer and Metal Substrates affect the Ex Vivo Expansion of $CD34^+$ Cells," J.A. LaIuppa, T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, abstract 911, American Society of Hematology Annual Meeting, Seattle, December 1995.

52. "Trans-Epithelial Electrical Resistance in Perfusion: Application for In Vitro Ocular Toxicity Testing," A.S. Pasternak, S. Mostafa, A. Lassiter, C. Bunker, and W.M. Miller, Engineering Foundation Conference on Cell Culture Engineering V, San Diego, January/February 1996.

53. "Conditions Affecting the Scale-Up of Hematopoietic Cell Cultures for Clinical Applications," P.C.Collins, E.T. Papoutsakis, and W.M. Miller, Engineering Foundation Conference on Cell Culture Engineering V, San Diego, January/February 1996.

54. "Inhibition of Hybridoma Growth and Metabolism by Elevated pCO_2," R. Kimura and W. M. Miller, BIOT paper 127, ACS National Meeting, New Orleans, March 1996.

55. "pH Effects on Hematopoietic Cell Culture," T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, BIOT paper 220, ACS National Meeting, New Orleans, March 1996.

56. “Factors affecting Megakaryocytic Expansion in Hematopoietic Cultures for Transplant Therapies," E.T. Papoutsakis, J. A. LaIauppa, and W.M. Miller, 1996 ESACT Meeting, Villamoura, Portugal, May 1996.

57. “Culture Parameters affecting the Metabolism, Expansion and Differentiation of Myeloid Hematopoietic Cells," E.T. Papoutsakis, P.C. Collins, S. Patel, T. A. McAdams, and W.M. Miller, 5th World Congress of Chemical Engineering, San Diego, July 1996.

58. "Oxygen Tension Affects Ex Vivo Expansion of Megakaryocytes (Mk), Granulocytes, and Erythrocytes in Cultures Containing TPO, G-CSF, and EPO," J.A. LaIuppa, E.T. Papoutsakis, and W.M. Miller, abstract 249, International Society of Experimental Hematology Annual Meeting, New York, August 1996.

59. "Regulation of NCAM Polysialylation by the Culture Environment," J.A. Zanghi, T.P. Mendoza, R.H. Knop, and W.M. Miller, paper #51i, AIChE National Meeting, Chicago, November 1996.

60. "The Effects of Culture pH on Hematopoietic Cell Differentiation," T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, paper #51t, AIChE National Meeting, Chicago, November 1996.

61. "Model-Based Analysis of the Effect of TGF-beta on Erythropoiesis," L.K. Nielsen, W.M. Miller, and E.T. Papoutsakis, paper #56f, AIChE National Meeting, Chicago, November 1996.

62. "Adaptation of Hematopoietic Cell Culture to Stirred Systems," P.C.Collins, E.T. Papoutsakis, and W.M. Miller, paper #57a, AIChE National Meeting, Chicago, November 1996.

63. "Effects of High Carbon Dioxide Levels on Hybridoma Growth and Metabolism in a Continuous Flow Reactor," V.M. deZengotita, R. Kimura and W.M. Miller, paper #57a, AIChE National Meeting, Chicago, November 1996.

64. "Lineage Distribution of Ex Vivo Hematopoietic Cultures is Substantially Influenced by Small Changes in Culture pH," T.A. McAdams, W.M. Miller, and E.T. Papoutsakis, abstract 2416, American Society of Hematology Annual Meeting, Orlando, December 1996.

65. "Model-Based Analysis of the Effect of TGF-β1 on Erythropoiesis," L.K. Nielsen, W.M. Miller, and E.T. Papoutsakis, abstract 572, American Society of Hematology Annual Meeting, Orlando, December 1996.

66. "Glucose and Lactate Metabolic Rates Predict Numbers of Colony-Forming Cells in Hematopoietic Culture," P.C.Collins, E.T. Papoutsakis, and W.M. Miller, abstract 2417, American Society of Hematology Annual Meeting, Orlando, December 1996.

67. "Effects of Seeding Density, Autologous Plasma, and Cytokine Combination on Ex Vivo Expansion (EVE) of Peripheral Blood Progenitor Cells (PBPC) in Unselected Serum- and Stroma-Free Cultures," M.H. Guo, W.M. Miller, E.T. Papoutsakis and J.N. Winter, abstract 2418, American Society of Hematology Annual Meeting, Orlando, December 1996.

68. "Regulation of NCAM Polysialylation by Culture Conditions and Nucleotide Sugar Pools in Mammalian Cells," J.A. Zanghi, T.P. Mendoza, R.H. Knop, and W.M. Miller, European Society for Animal Cell Technology Meeting, Tours, France, September 1997.

69. "The Regulation of Protein Sialylation by Increasing Nucleotide Sugar Concentrations," J.A. Zanghi, T.P. Mendoza, R.H. Knop, and W.M. Miller, European Workshop on Animal Cell Engineering, Costa Brava, Spain, October 1997.

70. "Real-time Method for Determining the Colony-Forming Cell Content of Human Hematopoietic Cell Cultures," P.C. Collins, C.K. Wong, E.T. Papoutsakis, and W.M. Miller, AIChE National Meeting, Los Angeles, November 1997.

71. "Regulation of NCAM Polysialylation by Altering Nucleotide Sugar Pools in Cultured Cells," J.A. Zanghi, T.P. Mendoza, R.H. Knop, and W.M. Miller, AIChE National Meeting, Los Angeles, November 1997.

72. "Characterization of Cellular Nutrition Requirements, Cell Metabolism and Cell Death Mechanism of a Fed-Batch Recombinant NS0 Culture," W. Zhou, V.deZengotita, W.M. Miller, J. Aunins, Engineering Foundation Conference on Cell Culture Engineering VI, San Diego, February 1998.

73. "Fed-Batch Recombinant NS0 Culture Process Improvements for Monoclonal Antibody Production," V.deZengotita, W.M. Miller, W. Zhou, J. Aunins, Engineering Foundation Conference on Cell Culture Engineering VI, San Diego, February 1998.

74. “Ex Vivo Expansion of Peripheral Blood Progenitor Cells Using Daniplestim, Myelopoietin, Progenipoietin, and Promegapoietin,” R. Guo, S. Patel, N.I. Minster, C.M. Baum, J.P. McKearn, E.T. Papoutsakis, W.M. Miller, J.N. Winter, International Society for Hematotherapy and Graft Engineering Annual Meeting, Baltimore, June 1998.

75. “Improvement of a Highly Productive Fed-Batch NS0 Cell Culture Process by Phosphate Feeding,” W. Zhou, V.M. deZengotita, W.M. Miller, and J.G. Aunins, American Chemical Society Annual Meeting, Boston, August 1998.

76. “Distribution of F-actin and G-actin in Airway Epithelial Cells: Effects of H_2O_2 and KGF,” K.C. Boardman, W.M. Miller, and C.M. Waters, Biomedical Engineering Society Annual Meeting, Cleveland, October 1998, *Annals Biomed. Engr*. **26**: S-32 (1998).

77. “A Novel Perfusion System for Measuring Resistance Across Cultured Airway Epithelium,” K.E. Chapman, T.F. Alig, W.M. Miller, and C.M. Waters, Biomedical Engineering Society Annual Meeting, Cleveland, October 1998, *Annals Biomed. Engr*., **26**: S-35 (1998).

78. "The Effects of Osmolality on CHO Cell Growth, Metabolism, and Protein Glycosylation," A.E. Schmelzer, V.M. deZengotita, T.P. Mendoza, and W.M. Miller, AIChE National Meeting, Miami Beach, November 1998.

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84. "Bone Marrow Architecture Affects Oxygen-Tension Levels and Gradients Experienced by Hematopoietic Cells," D.C. Chow, L.A. Wenning, W.M. Miller and E.T. Papoutsakis, Engineering Foundation Conference on Biochemical Engineering XI, Salt Lake City, July 1999.

85. "Oxygen and its Transport in Hematopoietic Life and Death," E.T. Papoutsakis, S. Mostafa, K.C. Carswell, D.C. Chow, and W. M. Miller, Engineering Foundation Conference on Biochemical Engineering XI, Salt Lake City, July 1999.

86. "Modeling Oxygen Distribution in the Hematopoietic Compartment of Bone Marrow," D.C. Chow, L.A. Wenning, W.M. Miller and E.T. Papoutsakis, paper 258f, AIChE National Meeting, Dallas, October/November 1999.

87. "Culture pH and pO_2 are Potent Determinants of Granulocyte Proliferation and Differentiation: Experimental Evidence and Model Verification," D.L. Hevehan, L.A. Wenning, E.T. Papoutsakis and W.M. Miller, Engineering Foundation Conference on Cell Culture Engineering VII, Santa Fe, February 2000.

88. "Topologically Significant Effects of Oxygen Tension on Megakaryocytic Differentiation and Maturation," S.M. Mostafa, W.M. Miller and E.T. Papoutsakis, Engineering Foundation Conference on Cell Culture Engineering VII, Santa Fe, February 2000.

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90. "Osmolality Plays a Predominant Role in Altering Monoclonal Antibody Glycosylation in Hybridoma Cells under Hypercapnia," A.E. Schmelzer, V.M. deZengotita and W.M. Miller, Engineering Foundation Conference on Cell Culture Engineering VII, Santa Fe, February 2000.

91. "Hybridoma Cell Response Mechanisms to Elevated Carbon Dioxide and Hyperosmotic Culture Conditions: Amino Acids as Protective Agents," V.M. deZengotita, A.E. Schmelzer, C. Dominguez, M. Sylvester and W.M. Miller, Engineering Foundation Conference on Cell Culture Engineering VII, Santa Fe, February 2000.

92. "Metabolic Patterns of Hematopoietic Cell Lineages," Y. Kuang, H. Yang, D.E. Pascoe, G. Liaw, L.A. Wenning, D.L. Hevehan, S.M. Mostafa, S.D. Patel, W.M. Miller and E.T. Papoutsakis, BIOT paper 74, ACS National Meeting, San Francisco, March 2000.

93. "Osmolality and CO_2 alter Monoclonal Antibody Glycosylation in Hybridoma Cells," A.E. Schmelzer, V.M. deZengotita and W.M. Miller, BIOT paper 140, ACS National Meeting, San Francisco, March 2000.

94. "Model-Based Estimation of Hematopoietic Progenitor Cell Content using Metabolic Activities," H. Yang, E.T. Papoutsakis and W.M. Miller, BIOT paper 361, ACS National Meeting, San Francisco, March 2000.

95. "Cytoskeletal Rearrangement in Airway Epithelial Cells Induced by Cyclic Stretch and Oxidant Exposure," C.M. Waters, K.C. Boardman, and W.M. Miller, American Thoracic Society Meeting, Toronto, May 2000, *Am. J. Respir. Crit. Care Med.*, **161**: A778 (2000).

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97. "A Dynamic Model of Ex Vivo Granulopoiesis: Effects of Oxygen Tension, pH and IL-3," D.L. Hevehan, L.A. Wenning, E.T. Papoutsakis and W.M. Miller, abstract 923, International Society of Experimental Hematology Annual Meeting, Tampa, July 2000.

98. "Oxygen Tension has Significant Effects on Megakaryocyte Maturation," S.M. Mostafa, W.M. Miller and E.T. Papoutsakis, abstract 924, International Society of Experimental Hematology Annual Meeting, Tampa, July 2000.

99. "Haematopoietic Tissue Engineering," E.T. Papoutsakis, S.M. Mostafa, D. Chow, K. Carswell and W.M. Miller, 15th Australasia Biotechnology Conference (ABA 2000), Brisbane, Australia, July 2000.

100. "pO_2 Modulates Megakaryocyte Expression of Cytokine Receptors, Transcription Factors, and Lineage-Specific Markers," S.S. Mostafa, E.T. Papoutsakis, and W.M. Miller, ACS National Meeting, San Diego, April 2001.

101. "Osmolality and CO_2 Alter Monoclonal Antibody Glycosylation in Hybridoma Cells," A.E. Schmelzer, V.M. de Zengotita, and W.M. Miller, ACS National Meeting, San Diego, April 2001.

102. "Amino Acids Protect Hybridoma and CHO Cells from Elevated CO_2," V.M. deZengotita, L.R. Abston, A.E. Schmelzer, and W.M. Miller, ACS National Meeting, San Diego, April 2001.

103. "Effects of Elevated CO_2 and Osmolality on Hybridoma Cell Size, Intracellular pH, Apoptosis, and Metabolism," V.M. deZengotita, A.E. Schmelzer, and W.M. Miller, ACS National Meeting, San Diego, April 2001.

104. "Small Changes in pH Can Influence Transduction Rates of a Therapeutic Retroviral Vector" T.W. Jensen and W.M. Miller, ISHAGE Annual Meeting, Quebec City, Canada, June 2001.

105. "Surface Immobilization of Cytokines: Techniques and Method Considerations," D.C. Chow, L.A. Wenning, E.T. Papoutsakis, and W.M. Miller ACS Annual Meeting, Chicago, IL, August 2001.

106. "Surface Modification for Hematopoietic Stem Cell Cultures Mimicking the Stem Cell Niche," D.C. Chow, J.B. Tooredman, E.T. Papoutsakis, and W.M. Miller BMES Annual Conference, Durham, NC, October 2001.

107. "Small Changes in pH can Enhance Transduction Efficiency of a Model Therapeutic Retroviral Vector Via Interaction with a Positively Charged Polymer," T.W. Jensen, Y. Chen, and W.M. Miller, paper 47b, AIChE Annual Meeting, Reno, NV, November 2001.

108. "Membrane-Mimetic Surface for Hematopoietic Cell Culture," T.W. Jensen, B.-H. Hu, P.B. Messersmith, and W.M. Miller, presented at Cell Culture Engineering 8, Snowmass, CO, April 2002.

109. "Elevated pH Increases Polymer-Aided Retroviral Vector Transduction Efficiency," Y. Chen, T.W. Jensen, and W.M. Miller, presented at Cell Culture Engineering 8, Snowmass, CO, April 2002.

110. "Over-Expression of NHE1 in CHO Cells Enhances Resistance to Elevated Ammonia Concentrations," L.R. Abston and W.M. Miller, presented at Cell Culture Engineering 8, Snowmass, CO, April 2002.

111. "Receptor Trafficking Dynamics of Hematopoietic Cells: A Predictive Model For Cell Proliferation, " D.C. Chow, L.A. Wenning, E.T. Papoutsakis, and W.M. Miller, presented at Cell Culture Engineering 8, Snowmass, CO, April 2002.

112. "Proteomic Analysis of Metabolic Changes in Fed-Batch CHO Cell Cultures," D.E. Pascoe, D. Arnott, W.M. Miller, E.T. Papoutsakis and D.C. Andersen, presented at Metabolic Engineering IV, Castelvecchio Pascoli, Italy, October 2002.

113. "Immobilized Stem Cell Factor Prolongs Activation of MAP Kinase Pathway and Enhances Ex Vivo Expansion of Peripheral Blood CD 34+ Cells," D.C. Chow, J.A. King, L. M. Giammona, E.T. Papoutsakis, and W.M. Miller, presented at American Society of Hematology Annual Meeting, Philadelphia, PA, December 2002.

114. "Proteomic Analysis of Metabolic Changes in Fed-Batch CHO Cell Cultures," D.E. Pascoe, D. Arnott, W.M. Miller, E.T. Papoutsakis and D.C. Andersen, presented at 225th ACS National Meeting, New Orleans, LA, March 2003.

115. “Stromal Cell Mimic for Presentation of Hematopoietic Stem Cell Adhesion Molecule Ligands,” William M. Miller (speaker), Tor W. Jensen, Bi-Huang Hu, and Phillip B. Messersmith, presented at Biochemical Engineering XIII, Boulder, CO, July 17-23, 2003.

116. “Novel Presentation of Hematopoietic Stem Cell Ligands, Tor W. Jensen (speaker), Bi-Huang Hu, Phillip B. Messersmith, and William M. Miller, presented at the AIChE Annual Meeting, San Francisco, CA, November 16-21, 2003.

117. “The Ratio of the Pantropic Envelope Expression Plasmid to the Vector Plasmid Strongly Affects the Production of Pantropic Retroviral Vectors,” Y. Chen (speaker), A. Aiyar, and W. M. Miller. presented at the AIChE Annual Meeting, San Francisco, CA, November 16-21, 2003.

118. “Hematopoietic Cell Interactions with Lipid-Linked Peptides in Hybrid Bilayer Membranes,” Shara M. Dellatore (presenter), Tor W. Jensen, Bi-Huang Hu, Phillip B. Messersmith, and William M. Miller, presented at Cell Culture Engineering IX, Cancun, Mexico, March 7-12, 2004.

119. “Cholesterol Supplementation Increases the Production of Retroviral and Lentiviral Vectors Pseudotyped with the Vesicular Stomatitis Virus Glycoprotein,” Y. Chen (presenter), A. Aiyar, P. Subbaiah, and W. M. Miller, presented at Cell Culture Engineering IX, Cancun, Mexico, March 7-12, 2004.

120. “Hematopoietic Cytokine Presentation in a Hybrid Bilayer Membrane,” Tor W. Jensen (speaker), Bi-Huang Hu, Shara M. Dellatore, Phillip B. Messersmith, and William M. Miller, presented at the American Chemical Society National Meeting, Anaheim, CA, March 28 – April 1, 2004.

121. “Adaptation of a Lentiviral Vector Producer Cell Line to Reduced-Serum, Suspension Culture for Large Scale Production,” K. Townsend (presenter), Y. Chen, J. Dayar, D. Farson, W. M. Miller, and A. A. Lin, presented at the American Society of Gene Therapy Annual Meeting, Minneapolis, MN, June 2-6, 2004.

122. "Biomimetic Soft Material Surfaces for Controlling Cell Behavior", Jeffrey Dalsin, Xiaowu Fan, Tor W. Jensen, Shara M. Dellatore, Bi-Huang Hu, Phillip B. Messersmith (speaker), and William M. Miller, presented at the Gordon Research Conference on Signal Transduction By Engineered Extracellular Matrices, Bates College, Maine, June 27-July 2, 2004.

123. “Cholesterol Supplementation Increases the Infectivity of Moloney Murine Leukemia Viral (MoMuLV) Vector Pseudotyped with Vesicular Stomatitis Virus Glycoprotein (VSV-G)” Y. Chen (speaker), A. Aiyar, P. Subbaiah, and W. M. Miller. AIChE Annual Meeting, Austin, TX, November 7-12, 2004.

124. “Lineage Plasticity and Determination in Ex Vivo Differentiation of Hematopoietic Stem Cells Examined by Large-Scale Transcriptional Analysis” L.T. Wang (speaker), C. Chen, E.T. Papoutsakis, and W. M. Miller. AIChE Annual Meeting, Austin, TX, November 7-12, 2004.

125. “DNA-Array Based Transcriptional Analysis Elucidates Granulocytic Differentiation of Human Stem Cells” L.T. Wang (presenter), W. M. Miller, and E.T. Papoutsakis. AIChE Annual Meeting, Austin, TX, November 7-12, 2004.

126. “Maturation and Death in Terminal Megakaryocytic Differentiation: Phenotypic and DNA Microarray Characterization” P.G. Fuhrken (speaker), C. Chen, L.M. Giammona, W. M. Miller, and E.T. Papoutsakis. AIChE Annual Meeting, Austin, TX, November 7-12, 2004.

127. “Mimicry of the Stem Cell Niche: Ligands Incorporated into a Supported Phospholipid Monolayer", Tor W. Jensen, A. Sofia Garcia, Shara M. Dellatore, Rico C. Gunawan, Bi-Huang Hu, Phillip B. Messersmith (speaker), and William M. Miller, presented at the MRS Spring meeting, March 29, 2005.

128. "Signaling from Peptide Ligands Presented in a Hybrid Bilayer Membrane," James A. King (speaker), Shara M. Dellatore, Tor W. Jensen, Bi-Huang Hu, Phillip B. Messersmith, and William M. Miller, presented at the Society for Biomaterials Annual Meeting, Memphis, TN, April 27-30, 2005.

129. “The Large-Scale Transcriptional Program in Human Megakaryocytic Differentiation,” P.G. Fuhrken (presenter) , C. Chen, W.M. Miller, and E.T. Papoutsakis, presented at Biochemical Engineering XIV, Harrison Hot Springs, British Columbia, July10-14, 2005.

130. “Cholesterol Supplementation During Production Increases the Infectivity of Retroviral and Lentiviral Vectors Pseudotyped with VSV-G,” W.M. Miller (presenter) , Y. Chen, A. Aiyar, and P. Subbaiah, presented at Biochemical Engineering XIV, Harrison Hot Springs, British Columbia, July10-14, 2005.

131. “Leveraging Large-Scale Transcriptional Analysis in Cell Culture Engineering,” P.G. Fuhrken (presenter), W.M. Miller, and E.T. Papoutsakis, to be presented at the AIChE Annual Meeting, Cincinnati, OH, October 30 – November 4, 2005.

132. “Megakaryocyte Development Illuminated by Transcriptional Analysis,” P.G. Fuhrken (speaker), C. Chen, W.M. Miller, and E.T. Papoutsakis, presented at the AIChE Annual Meeting, Cincinnati, OH, October 30 – November 4, 2005.

133. “Apoptotic Signaling Pathways in Megakaryocytes,” L.M. Giammona (speaker), E.T. Papoutsakis, and W.M. Miller, presented at the AIChE Annual Meeting, Cincinnati, OH, October 30 – November 4, 2005.

134. “Lineage Switching of Hematopoietic Cells in Response to Changes in Culture Conditions,” L.T. Huang, C. Chen, E.T. Papoutsakis, and W.M. Miller (speaker), presented at the AIChE Annual Meeting, Cincinnati, OH, October 30 – November 4, 2005.

135. “Lipopeptide Ligands Presented in a Hybrid Bilayer Membrane Activate Cell Signaling and Support Hematopoietic Cell Growth,” J.A. King (speaker), S.M. Dellatore, T.W. Jensen, B.-H. Hu, P.B. Messersmith, and W.M. Miller, presented at the AIChE Annual Meeting, Cincinnati, OH, October 30 – November 4, 2005.

136. “Immobilized Thrombopoietin (TPO) Lipopeptide Mimic Supports Similar Signaling and $CD34^+$ Cell Differentiation as Soluble TPO,” S.M. Dellatore (presenter) , J.A. King, T.W. Jensen, B.-H. Hu, P.B. Messersmith, and W.M. Miller, presented at the Annual Meeting of the American Society of Hematology, Atlanta, GA, December 9-14, 2005.

137. “Nicotinamide Enhances the Polyploidization of Primary Megakaryocytes,” L.M. Giammona (presenter), E.T. Papoutsakis, and W.M. Miller, presented at the Annual Meeting of the American Society of Hematology, Atlanta, GA, December 9-14, 2005.

138. “Developmental Plasticity Revealed by Lineage Switch from Committed Megakaryocytic Cells to Granulocytic Cells,” W.M. Miller, L.T. Huang (presenter), C. Chen, and E.T. Papoutsakis, presented at the Annual Meeting of the American Society of Hematology, Atlanta, GA, December 9-14, 2005.

139. “Exploring Global Transcriptional Responses to Ex Vivo Megakaryocyte Culture Conditions,” P.G. Fuhrken (presenter), L.M. Giammona, W.M. Miller, and E.T. Papoutsakis, presented at the Engineering Conferences International Conference on Cell Culture Engineering 10, Whistler, British Columbia, April 2006.

140. “Nicotinamide Increases the Productivity of Ex Vivo Megakaryocyte Cultures,” L.M. Giammona (presenter), E.T. Papoutsakis, and W.M. Miller, presented at the Engineering Conferences International Conference on Cell Culture Engineering 10, Whistler, British Columbia, April 2006.

141. “Evidence for transdifferentiation potential of committed hematopoietic cells E.T. Papoutsakis (presenter), L.T. Huang, C. Chen, P. Apostolidis, and W.M. Miller, presented at the American Chemical Society National Meeting, San Francisco, CA, September 2006.

142. “Ligand Presentation Using DOPA-Tethered Polyethylene Glycol,” R.C. Gunawan (presenter), J.A. King, B. Lee, P.B. Messersmith, and W.M. Miller, presented at the BMES Annual Meeting, Chicago, IL, October 2006.

143. “Nicotinamide enhances megakaryocyte differentiation from hematopoietic stem cells,” L.M. Giammona (presenter), P.G. Fuhrken, E.T. Papoutsakis, and W.M. Miller, presented at the BMES Annual Meeting, Chicago, IL, October 2006.

144. “Apoptosis in megakaryocyte-directed differentiation of hematopoietic stem cells,” P.G. Fuhrken (presenter), C. Chen, W.M. Miller, and E.T. Papoutsakis, presented at the BMES Annual Meeting, Chicago, IL, October 2006.

145. “Differentiation and Apoptosis in Megakaryocyte-Directed Hematopoietic Stem Cell Cultures,” P.G. Fuhrken, W.M. Miller, and E.T. Papoutsakis, presented at the AIChE Annual Meeting, San Francisco, November 2006.

146. “Nicotinamide (Vitamin B3) Increases the Ploidy and Proplatelet Production of Human Megakaryocytes: Phenotypic Characterization and Mechanism of Action,” W. M. Miller (presenter), L. M. Giammona, E. T. Papoutsakis, presented at the Engineering Conferences International Conference on Biochemical Engineering 15, Quebec City, Quebec, July 2007.

147. “Influence of Surface Fluidity on Cell Binding and Integrin Clustering,” A. S. Garcia (presenter), S. M. Dellatore, P. B. Messersmith, and W. M. Miller, presented at the Engineering Conferences International Conference on Biochemical Engineering 15, Quebec City, Quebec, July 2007.

148. “Defined Presentation of Extracellular Matrix Ligands for Cell Culture Applications,” S. M. Dellatore (presenter), A. S. Garcia, H. Lee, R. C. Gunawan, P. B. Messersmith, and W. M. Miller, presented at the Engineering Conferences International Conference on Engineering Cell Biology – The Cell in Context, Cambridge, MA, August 2007.

149. “p53 Tumor Suppressor Protein Affects Hematopoietic Stem Cell Differentiation in the Megakaryocytic Compartment,” P.G. Fuhrken, P.A. Apostolidis, S. Lindsey, W.M. Miller, and E.T. Papoutsakis (presenter), presented at the ACS National Meeting, Boston, August 2007.

150. “Increased ERK Activation and Intracellular NAD(H) Levels May Explain Nicotinamide-Mediated Increases in Megakaryocyte Size, Ploidy and Proplatelet Formation,” L.M. Giammona, E.T. Papoutsakis, and W.M. Miller (presenter), presented at the AIChE Annual Meeting, Salt Lake City, November 2007.

151. “Role of the p53 Tumor Suppressor Protein on Megakaryocytic Differentiation,” P.A. Apostolidis (presenter), P.G. Fuhrken, S. Lindsey, W.M. Miller, and E.T. Papoutsakis, presented at the AIChE Annual Meeting, Salt Lake City, November 2007.

152. “Avidin-Mediated Presentation Of Bioactive Peptides And Proteins Using Dopa-Tethered Poly(Ethylene Glycol),” R.C. Gunawan, J.A. King, P.B. Messersmith, and W.M. Miller, presented at the AIChE Annual Meeting, Salt Lake City, November 2007.

153. “Silencing of tumor suppressor p53 promotes polyploidization and defers apoptosis during megakaryocytic differentiation,” P.A. Apostolidis, P.G. Fuhrken, A. Duchoud, S. Lindsey, W.M. Miller, and E.T. Papoutsakis, presented at the ACS National Meeting, Philadelphia, August 2008.

154. “Nicotinamide Enhances Platelet-Producing Potential of Primary Human Megakaryocytes Through SIRT Inhibition,” S. Panuganti, L.M. Giammona, J. Kemper, P.A. Apostolidis, S. Lindsey, E.T. Papoutsakis, and W.M. Miller, presented at the Annual Meeting of the American Society of Hematology, San Francisco, December 2008.

155. “Tumor Suppressor Protein p53 Affects Megakaryocytic Maturation: In Vivo and Ex Vivo Post-Translational Modification Studies,” P.A. Apostolidis, A. Douchad, S. Lindsey, W.M. Miller, and E.T. Papoutsakis, presented at the Annual Meeting of the American Society of Hematology, San Francisco, December 2008.

156. “Tumor Suppressor Protein p53 Affects Megakaryocytic Maturation: In Vivo and Ex Vivo Post-Translational Modification Studies,” P.A. Apostolidis, A. Douchad, S. Lindsey, W.M. Miller, and E.T. Papoutsakis, presented at the 38th Annual Philadelphia Workshop on Thrombosis, Hemostasis and Atherosclerosis, Philadelphia, February 2009.

157. "Expansion of Megakaryocytic Progenitors with High Polyploidization Potential," S. Panuganti, E.T. Papoutsakis, and W.M. Miller, presented at the Engineering Conferences International Conference on Biochemical Engineering 16, Burlington, VT, July 2009.

158. “Tumor Suppressor Protein p53 affects Megakaryocytic Maturation: In Vivo and Ex Vivo Studies,” P.A. Apostolidis, A. Duchoud, S. Lindsey, W.M. Miller, and E.T. Papoutsakis, National Graduate Student Research Festival, NIH, Bethesda, MD, November 2009.

159. “Thrombopoietin Stimulation Leads to Enhanced Polyploidization in p53-/- Bone Marrow Megakaryocytes: In Vivo and in Vitro Studies,” P.A. Apostolidis, S. Lindsey, W.M. Miller, and E.T. Papoutsakis, Annual Meeting of the American Society of Hematology, New Orleans, December 2009.

160. “Bone Marrow Niche-Inspired, Multi-Phase Expansion of Megakaryocytic Progenitors with High Polyploidization Potential”, S. Panuganti, E.T. Papoutsakis, and W.M. Miller, American Chemical Society BIOT Division, San Francisco, CA, March 2010.

161. “Implications of p53 Loss for Megakaryocytic Differentiation and Platelet Production,” P.A. Apostolidis, W.M. Miller, and E.T. Papoutsakis, Engineering Conferences International Conference on Cell Culture Engineering 12, Banff, Alberta, Canada, April 2010.

162. “Bone Marrow Niche-Inspired, Multi-Phase Expansion of Megakaryocytic Progenitors with High Polyploidization Potential”, S. Panuganti, E.T. Papoutsakis, and W.M. Miller, Engineering Conferences International Conference on Cell Culture Engineering 12, Banff, Alberta, Canada, April 2010.

163. “Bone Marrow Niche-Inspired, Multi-Phase Expansion of Megakaryocytic Progenitors and Mature Megakaryocytic Cells with High Polyploidization Potential,” S. Panuganti, E.T. Papoutsakis, and W.M. Miller, SBE’s Second International Conference on Stem Cell Engineering, Boston, MA, May 2010.

164. “The Road to Ex Vivo Platelet Production: From Basic Biology to Bioreactor Systems, and How to Manage the Necessary Stress,” E.T. Papoutsakis, P.A. Apostolids, S. Panuganti, and W.M. Miller, Japanese Association for Animal Cell Technology, Sapporo, Japan, September 2010.

165. “Bone marrow niche-inspired, multi-phase expansion of megakaryocytic progenitors and high-ploidy Mk cells,” S. Panuganti, E. T. Papoutsakis, and W. M. Miller, Keystone Symposium on Stem Cells in Development, Tissue Homeostasis and Disease, Santa Fe, NM, January-February 2011.

166. “Bone marrow niche-inspired, multi-phase production of high-ploidy megakaryocytic cells from mobilized peripheral blood CD34+ cells in culture,” S. Panuganti, E.T. Papoutsakis, and W.M. Miller, Gordon Conference on Cell Biology of Megakaryocytes & Platelets, Galveston, TX, March 2011.

167. “In vivo and ex-vivo studies delineate the role of tumor suppressor p53 in cell cycle arrest and apoptosis during megakaryopoiesis and reveal a novel role for p53 in platelet function,”P.A. Apostolidis, D.S. Woulfe, W.M. Miller, and E.T. Papoutsakis, Gordon Conference on Cell Biology of Megakaryocytes & Platelets, Galveston, TX, March 2011.

168. “Bone marrow niche-inspired, multi-phase production of high-ploidy megakaryocytic cells from mobilized peripheral blood CD34+ cells in culture,” S. Panuganti, E.T. Papoutsakis, and W.M. Miller, Engineering Conferences International Conference on Biochemical and Molecular Engineering XVII, Emerging Frontiers, Seattle, WA, June 2011.

169. “Hydrogen peroxide increases the polyploidisation of PMA-differentiated K562 cells,” Y. Ojima, M.T. Duncun, and W.M. Miller, 17th Symposium of Young Asian Biochemical Engineers' Community, Incheon, Korea, October 2011.

170. “Physical or chemical inhibition of focal adhesions improves megakaryocytic cell line ploidy and proplatelet formation: Implications for in vitro platelet production,” A.C. Schlinker, D.C. Whitehead, and W.M. Miller, Engineering Conferences International Conference on Scale-Up and Manufacturing of Cell-Based Therapies, San Diego, CA, January 2012.

171. “Depletion of SIRT1, but not SIRT2, inhibits PMA-stimulated megakaryocytic differentiation of the K562 cell line,” M.T. Duncan and W.M. Miller, NIDDK workshop on Regulatory Determinants of Hematopoietic Stem Cell Self-Renewal, Lineage Commitment and Terminal Differentiation: New Insights, Washington, DC, February 2012.

172. “Blocking Mk cell line adhesion increases polyploidization and the potential for proplatelet formation,” A.C. Schlinker, D.C. Whitehead, and W.M. Miller, American Chemical Society National Meeting, San Diego, CA, March 2012.

173. “Depletion of SIRT1, but not SIRT2, inhibits PMA-stimulated megakaryocytic differentiation of the K562 cell line,” M.T. Duncan and W.M. Miller, 3rd International Conference in Stem Cell Engineering, Designing Cellular Therapies, Seattle, WA, April/May 2012.

174. “Modulating Megakaryocyte Adhesion for Improved Proplatelet Formation,” A.C. Schlinker, D.C. Whitehead, and W.M. Miller, AIChE Annual Meeting, Pittsburgh, October 2012.

175. “Depletion of SIRT1, but Not SIRT2, Inhibits PMA-Stimulated Megakaryocytic Differentiation of the K562 Cell Line,” M.T. Duncan, Z. Mays, N. Kini, M. Yi, and W.M. Miller, AIChE Annual Meeting, Pittsburgh, October 2012.

176. “The role of oxidative stress in the megakaryocytic differentiation of K562 cells,” R. Nurhayati, Y. Ojima, M. Duncan, W. Miller, 64th Annual Meeting, Society for Biotechnology, Kobe, Japan, October 2012.

177. “Production of high-ploidy megakaryocytic cells and functional platelets in culture using a 3-phase process,” A.C. Schlinker, S. Panuganti, P.F. Lindholm, E.T. Papoutsakis, and W.M. Miller, Engineering Conferences International Conference on Scale-Up and Manufacturing of Cell-Based Therapies II, San Diego, CA, January 2013.

178. “Dynamic transcription factor activity profile during megakaryocyte/erythrocyte differentiation,” M.T. Duncan, S. Shin, L.D. Shea, and W.M. Miller, Gordon Conference on Cell Biology of Megakaryocytes & Platelets, Galveston, TX, March 2013.

179. “Production of high-ploidy megakaryocytic cells and functional platelets in culture using a 3-phase process,” A.C. Schlinker, S. Panuganti, P.F. Lindholm, E.T. Papoutsakis, and W.M. Miller, Gordon Conference on Cell Biology of Megakaryocytes & Platelets, Galveston, TX, March 2013.

180. “Modulating megakaryocytesurface interactions to increase proplatelet formation and synchronize platelet generation in culture,” A.C. Schlinker, D.C. Whitehead, and W.M. Miller, Gordon Conference on Cell Biology of Megakaryocytes & Platelets, Galveston, TX, March 2013.

181. “SIRT1 modulates megakaryocytic and erythroid cell differentiation: Implications for culture-derived platelets and blood cells,” W.M. Miller, M.T. Duncan, T.A. DeLuca, M. Yi, H.-Y. Kuo, and M. Mrksich, Engineering Conferences International Conference on Biochemical and Molecular Engineering XVIII, Beijing, China, June 2013.

182. “Separation of In Vitro-Derived Megakaryocytes and Platelets Using Spinning Membrane Filtration,” A. Schlinker, K. Radwanski, C. Wegener, W. Miller, K. Min, AABB 2013 Annual Meeting and CTTXPO, Denver, CO, October 2013.

183. “Transcription factor activity profiling reveals new insights into megakaryocyte and erythrocyte differentiation,” M.T. Duncan, S. Shin, Z. Mays, L.D. Shea, W.M. Miller, AIChE Annual Meeting, San Francisco, November 2013.

184. “Exploring the role of sirtuin deacetylases in regulating megakaryocyte and erythrocyte differentiation,” M.T. Duncan, M. Yi, W.M. Miller, AIChE Annual Meeting, San Francisco, November 2013.

185. “Role of Lysine Deacetylases in Megakaryocyte Differentiation,” T.A. DeLuca, H.-Y. Kuo, M. Mrksich, W.M. Miller, AIChE Annual Meeting, San Francisco, November 2013.

186. “Using dynamic transcription factor activity to describe regulatory mechanisms during megakaryocytic and erythroid differentiation,” J. Wu, M.T. Duncan, S. Shin, W.M. Miller, L.D. Shea, N. Bagheri, RECOMB/ISCB Conference on Regulatory and Systems Genomics, Toronto, November 2013.

187. “Facilitating Cells Derived from Deceased Donor Bone Marrow and Mobilized Peripheral Blood Have Similar Phenotypic and Functional Properties, I.M. Konieczna, J. He, J. Mathew, W.M. Miller, J.R. Leventhal, American Society for Histocompatibility and Immunogenetics (ASHI) Annual Meeting, Chicago, November 2013.

188. “Separation of In Vitro-Derived Megakaryocytes and Platelets Using Spinning Membrane Filtration,” A.C. Schlinker, K. Radwanski, C. Wegener, W.M. Miller, K. Min, Annual Meeting of the American Society of Hematology, New Orleans, December 2013.

189. “Dynamic Transcription Factor Activity Profiles and Inferred Networks Reveal Key Regulatory Interactions during Megakaryocytic and Erythroid Differentiation of Bipotent Progenitor Cells,” W.M. Miller, M.T. Duncan, S. Shin, J.J. Wu, N. Bagheri, L.D. Shea, Scale-Up and Manufacturing of Cell-Based Therapies III, San Diego, January 2014.

190. “Lysine Deacetylase (KDAC) Enzyme Activity in Cell Differentiation,” T.A. DeLuca, H.-Y. Kuo, M. Mrksich, W.M. Miller, Scale-Up and Manufacturing of Cell-Based Therapies III, San Diego, January 2014.

191. “Producing and Harvesting Culture-Derived Platelets with Functional Activity from Blood Stem Cells,” W.M. Miller, A.C. Schlinker, P.F. Lindholm, K. Radwanski, C. Wegener, K.A. Min, Cell Culture Engineering XIV, Quebec City, Canada, May 2014.

192. “Profiling Lysine Deacetylase Activities in Cell Lysates with Peptide Arrays and SAMDI Mass Spectroscopy – Application to CHRF Cell Megakaryocyte Differentiation,” W.M. Miller, T.A. DeLuca, H.-Y. Kuo, M. Mrksich, Cell Culture Engineering XIV, Quebec City, Canada, May 2014.

193. “Producing and Harvesting Culture-Derived Platelets with Functional Activity from Blood Stem Cells,” W.M. Miller, A.C. Schlinker, K. Radwanski, C. Wegener, K.A. Min, 16th European Congress on Biotechnology, Edinburgh, Scotland, July, 2014.

194. “SIRT1 Is a Critical Regulator of Proliferation, Survival, and E/Mk Lineage Commitment and Differentiation of Bipotent K562 Cells,” M.T. Duncan, T.A. DeLuca, W.M. Miller, Scale-Up and Manufacturing of Cell-Based Therapies IV, San Diego, January 2015.

195. “Harvesting Culture-Derived Platelets with Functional Activity from Blood Stem and Progenitor Cells,” W.M. Miller, A.C. Schlinker, K. Radwanski, C. Wegener, K.A. Min, Scale-Up and Manufacturing of Cell-Based Therapies IV, San Diego, January 2015.

196. “Ex Vivo Platelet Production from Hematopoietic Stem Cells: Understanding the Environment and Signaling Pathways Directing Proplatelet Formation,” T. DeLuca, L. Helfrich, P. Weingarden, A. Schlinker1, L. Shea, W. Miller, 249th American Chemical Society National Meeting, Denver, March 2015.

197. “Recellularization of Bioengineered Kidney Scaffolds in Perfused Bioreactors using ΔP and Metabolic Profiles as Surrogate Markers for Tissue and Scaffold Integrity,” W.M. Miller, J.S. Uzarski, B.M. Bijonowski, J. A. Wertheim, Biochemical and Molecular Engineering XIX, Puerto Vallarta, Mexico, July 2015.

198. “Integrating team building and collaboration in a MS in biotechnology program,” W.M. Miller, C.Z. Hoeppner, I.V. Kourkine, P.A. Felse, V.R. Haley, Biochemical and Molecular Engineering XIX, Puerto Vallarta, Mexico, July 2015.

199. “Comparative Evaluation of Mature and Progenitor Human Renal Tubule Cell Adaptation within Decellularized Renal Extracellular Matrices,” J.S. Uzarski, H.H. Ward, A. Wandinger-Ness, W.M. Miller, J.A. Wertheim, TERMIS World Congress, Boston, September 2015.

200. “Towards Developing a Process for Efficient Ex Vivo Platelet Production: Megakaryocyte Synchronization and Shear-Stress-Enhanced Platelet Release,” M.T. Duncan, T.A. DeLuca, A.C. Schlinker, A.F. Martinez, J. Magura, R.D. McMahon, W.M. Miller, TERMIS World Congress, Boston, September 2015.

201. “*Ex vivo* Platelet Production from Hematopoietic Stem Cells: Molecular Signaling Directing Proplatelet Formation,” T.A. DeLuca, L. Helfrich, L.D. Shea, and W.M. Miller, TERMIS World Congress, Boston, September 2015.

202. “Four phase ex vivo production of human platelets from CD34+ cord blood-derived megakaryocytes,” J.J. Wu, B.J. Petro, D.A. Abbott, N. Bagheri, N. Mahmud, W.M. Miller, Poster presented at NIDDK Workshop on ‘Remodeling the Hematopoietic Bone Marrow Niche,’ Bethesda, MD, April 2016.

203. “Mechanisms of Cellular Repopulation within Healthy or Intrinsically Scarred Kidney Extracellular Matrix Scaffolds” J.S. Uzarski, C.A. Deaton, H.H. Ward, A. Wandinger-Ness, W.M. Miller, and J.A. Wertheim, 2016 American Transplant Congress, Boston, June 2016.

204. “Considerations for using the Resazurin Reduction Assay for Temporal Quantification of Cell Number in Tissue Engineering and Three-Dimensional Perfusion Culture Applications” J.S. Uzarski, M.D. DiVito, W.M. Miller, and J.A. Wertheim, Biomedical Engineering Society Annual Meeting, Minneapolis, October 2016.

205. “Enhancing *ex vivo* platelet production with the use of shear forces within microfluidic bioreactors,” A.F. Martinez, K.A. Jenkins, R.D. McMahon, and W.M. Miller, Society of Hispanic Professional Engineers National Conference, Seattle, November 2016.

206. “Enhancing *Ex Vivo* Platelet Production through Shear Forces within Defined Bioreactors,” A.F. Martinez, K.A. Jenkins, R.D. McMahon, and W.M. Miller, AIChE Annual Meeting, San Francisco, November 2016.

207. “Extracellular Matrix Alterations Induced by Renal Fibrosis Perturb Epithelial Tubulogenesis in a Decellularized Whole-Kidney Model,” J.S. Uzarski, R.C. Hill, K. Hansen, W.M. Miller, and J.A. Wertheim, American Society of Nephrology Kidney Week 2016, Chicago, November 2016.

208. “Using Computational Fluid Dynamics (CFD) to Enhance *Ex Vivo* Platelet Production via Shear Forces within Microfluidic Bioreactors,” A.F. Martinez, K.A. Jenkins, R.D. McMahon, and W.M. Miller, Annual Meeting of the American Society of Hematology, San Diego, December 2016.

209. “Multifunctional urban green spaces for stormwater retention and climate adaption in cities,” L.M Hernandez Gonzalez, V.A. Rivera, A. Nair, L. Ayala, C.B. Phillips, W.M. Miller, A.I. Packman, Wild Things Conference, Chicago, IL, February 2017.

210. “Functionalized poly(ethylene glycol)-based hydrogels as a synthetic culture surface to enhance in-vitro proplatelet formation,” E.N. Bess, J. Berry, W.M. Miller, American Chemical Society National Meeting, San Francisco, CA, April 2017.

211. “Impacts of stormwater runoff on the soil and water quality of an urban prairie nature preserve,” L.M. Hernandez, V.A. Rivera, H. Chang, L.E. Yeager, S. Hatch, L. Ayala, D. Packman, J. Standley Pradhan, N. Lu, K.J. Gnaedinger, M.C. Negri, W.M. Miller, A.I. Packman, HydroEco Confernece, Birmingham, UK, June 2017.

212. “Integrated hydrological assessment of an urban nature preserve using a high-frequency sensor network,” V.A. Rivera, L.M Hernandez-Gonzalez, L. Ayala, C.B. Philips, A. Nair, K.J. Gnaedinger, P. Beckman, R. Sankran, M.C. Negri, W.M. Miller, A.I. Packman, HydroEco Confernece, Birmingham, UK, June 2017.

213. “Using computational fluid dynamics (CFD) to design and characterize a microfluidic bioreactor for rapid release of culture-derived platelets,” W.M. Miller, A.F. Martinez, R.D. McMahon, M. Horner, Biochemical and Molecular Engineering XX, Newport Beach, CA, July 2017.

214. “Design considerations to ensure accuracy when using the resazurin reduction assay to noninvasively quantify cell expansion within perfused extracellular matrix scaffolds,” W.M. Miller, J.S. Uzarski, M.D. DiVito, J.A. Wertheim, Biochemical and Molecular Engineering XX, Newport Beach, CA, July 2017.

215. “Evaluation of Seasonality in Shallow Groundwater Dynamics and Storage in an Urban Prairie Nature Preserve Using a High-Frequency Sensing Network” V.A Rivera, L.M. Hernandez, C.B. Phillips, A. Nair, K.J. Gnaedinger, M.C. Negri, W.M. Miller, A.I. Packman, American Geophysical Union Fall Meeting, New Orleans, LA, August 2017.

216. “Gaussian Mixture Models and Machine Learning Predict Megakaryocytic Growth and Differentiation Potential Ex Vivo, J.J. Wu, D.A. Abbott, M.K. Terzioglu, D. Mahmud, N. Mahmud, W.M. Miller, N. Bagheri, 10th Annual RECOMB/ISCB Conference on Regulatory & Systems Genomics, with DREAM Challenges, New York, NY, November 2017.

217. “Gaussian Mixture Models and Machine Learning Predict Megakaryocytic Growth and Differentiation Potential Ex Vivo, J.J. Wu, D.A. Abbott, M.K. Terzioglu, D. Mahmud, N. Mahmud, W.M. Miller, N. Bagheri, Annual Meeting of the American Society of Hematology, Atlanta, GA, December 2017.

218. “Multi-phase ex vivo generation of platelet-like particles from CD34+ cord blood cell-derived megakaryocytes,” J.J. Wu, D.A. Abbott, M.K. Terzio, R. Ranjan, D. Mahmud, H. Issa, N.

Bagheri, N. Mahmud, W.M. Miller, Annual Meeting of the American Society of Hematology, Atlanta, GA, December 2017.

219. "Generation of megakaryocytes and platelet like particles from valproic acid expanded human cord blood CD34+ cells," N. Mahmud, R. Ranjan, J.J. Wu, B. Petro, M. Terzioglu, H. Issa, D.A. Abbott, D. Mahmud, W.M. Miller, Annual Meeting of the American Society of Hematology, Atlanta, GA, December 2017.

220. "Optimizing sustainable reconstruction in an era of increasing disasters," V. Dwivedi, D.J. Garcia, M. Hettiarachchi, A. van Breda, M.M. McMahon, S.H. Carr, W.M. Miller, 18th National Conference and Global Forum on Science Policy and the Environment, Washington, DC, January 2018.

221. "Impacts of stormwater runoff on the soil and water quality of an urban wetland in Chicago," L.M. Hernandez Gonzalez, V.A. Rivera, W.M. Miller, A.I. Packman, Wetland Science Conference, Lake Geneva, WI, February 2018.

222. "Optimizing sustainable reconstruction in an era of increasing disasters," W.M. Miller, V. Dwivedi, D.J. Garcia, M.M. McMahon, S.H. Carr, M. Hettiarachchi, A. van Breda, Natural Capital Symposium, Palo Alto, CA, March 2018.

223. "Assessing the performance and community impacts of green infrastructure and natural areas for urban flooding mitigation," W.M. Miller, L.M. Hernandez, V.A. Rivera, C.B. Phillips, V. Venkataramanan, R. Sankaran, P.H. Beckman, S.L. Young, A.I. Packman, Natural Capital Symposium, Palo Alto, CA, March 2018.

224. "Engineering uniform-shear rate bioreactors to mimic bone marrow and lung vasculature niches for the production of platelets ex vivo," A.F. Martinez, R.D. McMahon, M. Horner, D. Doser, W.M. Miller, American Chemical Society National Meeting, New Orleans, LA, March 2018.

225. "Gaussian Mixture Models and Machine Learning Predict Megakaryocyte Growth and Differentiation Potential Ex Vivo," W.M. Miller, J.J. Wu, D.A. Abbott, N. Bagheri, M.K. Terzioglu, D. Mahmud, N. Mahmud, Cell Culture Engineering XVI, Tampa, FL, May 2018.

226. "Evaluating a Gas-Permeable Culture Surface for the Generation of Megakaryocytes for In Vitro Platelet Production," A.F Martinez, W.M. Miller, Cell Culture Engineering XVI, Tampa, FL, May 2018.

227. "Monitoring salinity changes in a Chicago prairie wetland using electromagnetic induction and in-situ sensing methods," L.M. Hernandez Gonzalez, V.A. Rivera, C.B. Phillips, W.M. Miller, A.I. Packman, American Geophysical Union Fall Meeting, Washington, DC, December 2018.

228. "micro-Waggle: Low-profile, modular sensor platform for environmental research," V. Rivera, R. Sankaran, S. Shahkarami, W.M. Miller, A.I. Packman, P.H. Beckman, American Geophysical Union Fall Meeting, Washington, DC, December 2018.

229. "Enabling large-scale ex vivo production of megakaryocytes and platelets from CD34+ cells using gas-permeable surfaces and microfluidic bioreactors," A.F. Martinez, W.M. Miller, Advancing Manufacture of Cell and Gene Therapies VI, Coronado, CA, January 2019.

230. "Using Gaussian mixture models and machine learning to predict donor-dependent megakaryocytic cell growth and differentiation potential ex vivo," J.J. Wu, N. Bagheri, W.M. Miller, Advancing Manufacture of Cell and Gene Therapies VI, Coronado, CA, January 2019.

231. “Distributed high-frequency sensing of urban green spaces for stormwater retention and ecological resilience,” L.M. Hernandez Gonzalez, V.A. Rivera, C.B. Phillips, T.Franz, W.M. Miller, A.I. Packman, Gordon Research Conference on Catchment Science: Interactions of Hydrology, Biology and Geochemistry, Andover, NH, June 2019.

232. “Distributed high-frequency sensing of urban green spaces for stormwater retention and ecological resilience,” L.M. Hernandez Gonzalez, V.A. Rivera, C.B. Phillips, T. Franz, W.M. Miller, A.I. Packman, AGU Fall Meeting, San Francisco, CA, December 2019.

233. “Road salt intrusion dynamics in a Midwestern prairie-wetland complex,” L. M. Hernandez Gonzalez, V. A. Rivera, C. B. Phillips, W. M. Miller, A. I. Packman, AGU Fall Meeting, Virtual Conference, December 2020.

234. “Construction materials for post-earthquake buildings,” S.H. Carr, M. Hettiarachchi, W.M. Miller, J. Dunn, A. Waechter, T. Norton, 17th World Congress on Earthquake Engineering, Sendai, Japan, September 2021.

235. “Internal Spatio-temporal Dynamics of Greenspaces Influence Connectivity to Urban Landscapes,” V. Rivera, L. Hernandez Gonzalez, C. O’Brien, W. Miller, A. Packman, AGU Fall Meeting, New Orleans, LA, December 2021.

236. “In Situ Sensing of Manoomin (Wild Rice) Habitat to Create a Voice for Plant Relatives, J. Gurnea, C. O'Brien, V.A. Rivera, A. Curtis, M. O'Connell, A. Cottrell, N. Tillison, J. Gilbert, J. Coleman, R. Sankaran, J. Hester, W.M. Miller, A.I. Packman, AGU Fall Meeting, Chicago, IL, December 2022.

237. “Exploring the environmental and social benefits of vacant land redevelopment: a partnership between educators, NGOs, and scientists,” C. O’Brien, J. Jenkins, V.A. Rivera, J. Gurneau, R. Jones, S. Young, E.L. Cabonargi, W.M. Miller, P. Guilianelli, A.I. Packman, S.E. Ippel, J. Legge, AGU Fall Meeting, Chicago, IL, December 2022.

238. “Identifying stormwater inputs and their impacts on soil and habitat quality of restored urban prairies,” C. OBrien, J. Jenkins, V.A. Rivera, L.M. Hernandez Gonzalez, J. Gurneau, E. Pfeiffer, K.J. Gnaedinger, W.M. Miller, A.I. Packman, AGU Fall Meeting, Chicago, IL, December 2022.

239. “Stormwater Storage and Ecological Resilience of Restored Urban Prairies,” C. O’Brien, J. Jenkins, V. Rivera, L. Hernandez-Gonzalez, J. Gurneau, K. Gnaedinger, E. Pfeiffer, S. Tripp, M. Lopez-Salazar, W. Miller, A. Packman, AGU Fall Meeting, San Francisco, CA, December 2023.