Curriculum Vitae

Maciek R. Antoniewicz
Professor
Department of Chemical Engineering
University of Michigan
2800 Plymouth Road, Ann Arbor, MI 48109-2800 USA
Tel.: (734) 647-1197 Email: mranton@umich.edu

RESEARCH INTERESTS

Metabolic engineering, systems biology, metabolism, microbial communities, microbiome, adaptive laboratory evolution, cancer, CHO cell culture, biotechnology, non-model organisms

EDUCATION

Massachusetts Institute of Technology (MIT) 2001-2006
Department of Chemical Engineering, Degree: Ph.D.
Advisor: Gregory Stephanopoulos
PhD Thesis: *"Comprehensive analysis of metabolic pathways through the combined use of multiple isotopic tracers"*

Delft University of Technology, The Netherlands 1994-2000
Department of Chemical Engineering. Degrees: B.S. and M.S. (Magna Cum Laude)
Advisor: Joseph J. Heijnen
MS Thesis: *"Metabolic flux analysis using mass spectrometry: methodologies for in vivo analysis of metabolic networks using steady state ^{13}C-tracer experiments"*

APPOINTMENTS

Professor 2019-present
Department of Chemical Engineering, University of Michigan

Centennial Professor 2017-2019
Department of Chemical & Biomolecular Engineering, University of Delaware

Centennial Associate Professor 2016-2017
Department of Chemical & Biomolecular Engineering, University of Delaware

Associate Professor 2013-2016
Department of Chemical & Biomolecular Engineering, University of Delaware

Assistant Professor 2007-13
Department of Chemical & Biomolecular Engineering, University of Delaware

Postdoctoral Researcher 2007
DuPont, Central Research & Development, Wilmington, DE

Postdoctoral Researcher 2006
Department of Chemical Engineering, Massachusetts Institute of Technology

AWARDS AND HONORS

Elected Fellow, American Institute for Medical and Biological Engineering (AIMBE)	2018
National Academy of Engineering (NAE) US-EU, Frontiers of Engineering Participant	2017
Centennial Professorship, University of Delaware	2016
Biotechnology and Bioengineering Daniel I.C. Wang Award	2015
Gerard J. Mangone Best Young Scholar Award, University of Delaware	2012
Outstanding Junior Faculty Member, College of Engineering, Univ. of Delaware	2012
National Science Foundation (NSF) CAREER Award	2011
University of Delaware Research Foundation Strategic Initiatives Research Award	2009
James E. Bailey Young Investigator Award in Metabolic Engineering	2008
DuPont Young Professor Award	2008
University of Delaware Research Foundation Research Award	2008

STUDENT AWARDS AND HONORS

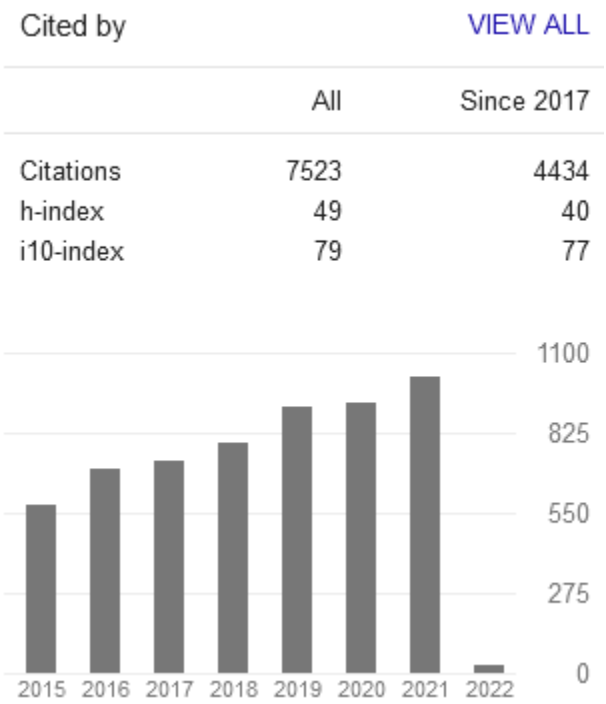
Gerald Har, 1st prize for Best Oral Presentation at SIMB Annual Meeting	2019
Chris Long, Theodore Wolf Prize for Best PhD Dissertation in Physical and Life Sciences at the University of Delaware	2018
Camil Diaz, Richard Wool Award for Women in Green Engineering, U. of Delaware	2018
Robert Cipolla, 2nd prize for Best Poster at AIChE Annual Student Conference	2017
Brian McConnell, Graduate Fellows Award, University of Delaware	2017
Brian McConnell, Poster Award at Metabolic Engineering 11 Conference, Japan	2016
Nikodimos Gebreselassie, Best Overall Poster Award, 9th Frontiers in Chemistry and Biology Interface Symposium (FCBIS), Baltimore MD	2016
Camil Diaz, honorable mention for NSF Graduate Fellowship	2016
Jackie Gonzalez, Graduate Fellows Award, University of Delaware	2016
Chris Long, Graduate Fellows Award, University of Delaware	2015
Lauren Cordova, NSF Graduate Fellowship	2015
Camil Diaz, honorable mention for NSF Graduate Fellowship	2015
Lauren Cordova, 1st prize for Best Poster at AIChE Annual Student Conference	2014
Scott Crown, Theodore Wolf Prize for Best PhD Dissertation in Physical and Life Sciences at the University of Delaware	2014
Scott Crown, “Nature Chemical Biology Best Poster Award on Metabolic Engineering”, Metabolic Engineering Conference VIII, Korea	2010
Jung Choi, “2010 Metabolic Engineering Best Poster Award”, Metabolic Engineering Conference VIII, Korea	2010
Scott Crown, NSF Graduate Fellowship	2010

EDITORIAL BOARDS

Current Research in Biotechnology, Editorial Board	2021-present
Metabolic Engineering Communications, Associate Editor	2014-present
Metabolic Engineering, Editorial Board	2013-present
Biotechnology Journal, Editorial Board	2011-present
Current Opinion in Biotechnology, Editorial Board	2010-present

PUBLICATIONS

Google Scholar: Total citation 7523; h-index = 49 (updated on 1/6/2022)



The number of citations as of 1/6/2022 in brackets (Source: Google Scholar).

Peer-Reviewed Publications

1. [0] Oates EH, **Antoniewicz MR**. Coordinated reprogramming of metabolism and cell function in adipocytes from proliferation to differentiation. *Metab Eng*, 69: 221-230, 2022 (Journal Impact Factor: 9.7) ***(corresponding author)***

2. [2] Bennett RK, Gregory GJ, Gonzalez JE, Har JRG, **Antoniewicz MR**, Papoutsakis ET. Improving the methanol tolerance of an *Escherichia coli* methylotroph via adaptive laboratory evolution enhances synthetic methanol utilization. *Front Microbiol*, 12: 638426, 2021 (Journal Impact Factor: 5.6)

3. [4] Har JRG, Agee A, Bennett RK, Papoutsakis ET, **Antoniewicz MR**. Adaptive laboratory evolution of methylotrophic *Escherichia coli* enables synthesis of all amino acids from methanol-derived carbon. *Appl Microbiol Biotechnol*, 105(2): 869-876, 2021 (Journal Impact Factor: 3.5) ***(corresponding author)***

4. [12] **Antoniewicz MR**. A guide to metabolic flux analysis in metabolic engineering: methods, tools and applications. *Metab Eng*, 63: 2-12, 2021 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

5. [3] Bennett RK, Agee A, Har JRG, von Hagel B, **Antoniewicz MR**, Papoutsakis ET. Regulatory interventions improve the biosynthesis of limiting amino acids from methanol carbon to improve synthetic methylotrophy in *Escherichia coli*. *Biotechnol Bioeng*, 118(1), 43-57, 2021 (Journal Impact Factor: 4.0)

6. [23] **Antoniewicz MR**. A guide to deciphering microbial interactions and metabolic fluxes in microbiome communities. *Curr Opin Biotechnol*, 64: 230-237, 2020 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

7. [7] Bennett RK, Agee A, Har JRG, von Hagel B, Siu KH, **Antoniewicz MR**, Papoutsakis ET. Triggering the stringent response enhances synthetic methanol utilization in *Escherichia coli*. *Metab Eng*, 61: 1-10, 2020 (Journal Impact Factor: 9.7)

8. [27] Bennett RK, Dillon M, Har JRG, Agee A, von Hagel B, Rohlhill J, **Antoniewicz MR**, Papoutsakis ET. Engineering *Escherichia coli* for methanol-dependent growth on glucose for metabolite production. *Metab Eng*, 60: 45-55, 2020 (Journal Impact Factor: 9.7)

9. [16] Rohlhill J, Har JRG, **Antoniewicz MR**, Papoutsakis ET. Improving synthetic methylotrophy via dynamic formaldehyde regulation of pentose phosphate pathway genes and redox perturbation. *Metab Eng*, 57: 247-255, 2020 (Journal Impact Factor: 9.7)

10. [72] Long CP, **Antoniewicz MR**. High-resolution ^{13}C metabolic flux analysis. *Nat Protoc*, 14: 2856-2877, 2019 (Journal Impact Factor: 13.4) ***(corresponding author)***

11. [32] **Antoniewicz MR**. Synthetic methylotrophy: Strategies to assimilate methanol for growth and chemicals production. *Curr Opin Biotechnol*, 59: 165-174, 2019 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

12. [21] Foster CJ, Gopalakrishnan S, **Antoniewicz MR**, Maranas CD. From *Escherichia coli* mutant ^{13}C labeling data to a core kinetic model: A kinetic model parameterization pipeline. *PLoS Comp Biol*, 15(9): e1007319, 2019 (Journal Impact Factor: 4.4)

13. [24] Long CP, **Antoniewicz MR**. Metabolic flux responses to deletion of 20 core enzymes reveal flexibility and limits of *E. coli* metabolism. *Metab Eng*, 55: 249-257, 2019 (Journal Impact Factor: 9.7) ***(corresponding author)***

14. [21] Chen Y, McConnell BO, Gayatri Dhara V, Mukesh Naik H, Li CT, **Antoniewicz MR**, Betenbaugh MJ. An unconventional uptake rate objective function approach enhances applicability of genome-scale models for mammalian cells. *NPJ Syst Biol Appl*, 5: 25, 2019 (Journal Impact Factor: 4.3)

15. [12] Choi J, **Antoniewicz MR**. Tandem mass spectrometry for ^{13}C metabolic flux analysis: Methods and algorithms based on EMU framework. *Front Microbiol*, 10: 31, 2019 (Journal Impact Factor: 5.6) ***(corresponding author)***

16. [13] Diaz CAC, Bennett RK, Papoutsakis ET, **Antoniewicz MR**. Deletion of four genes in *Escherichia coli* enables preferential consumption of xylose and secretion of glucose. *Metab Eng*, 52: 168-177, 2019 (Journal Impact Factor: 9.7) ***(corresponding author)***

17. [21] Long CP, **Antoniewicz MR**. How adaptive evolution reshapes metabolism to improve fitness: recent advances and future outlook. *Curr Opin Chem Eng*, 22: 209-215, 2018 ***[invited review article]*** (Journal Impact Factor: 4.8) ***(corresponding author)***

18. [22] Wolfsberg E, Long CP, **Antoniewicz MR**. Metabolism in dense microbial colonies: ^{13}C metabolic flux analysis of *E. coli* grown on agar identifies two distinct cell populations with acetate cross-feeding. *Metab Eng*, 49: 242-247, 2018 (Journal Impact Factor: 9.7) ***(corresponding author)***

19. [108] **Antoniewicz MR**. A guide to ^{13}C metabolic flux analysis for the cancer biologist. *Exp Mol Med*, 50(4): 19, 2018 ***[invited review article]*** (Journal Impact Factor: 8.7) ***(corresponding author)***

20. [221] DeWaal D, Nogueira V, Terry AR, Patra CP, Jeon SM, Guzman G, Au J, Long CP, **Antoniewicz MR**, Hay N. Hexokinase-2 depletion inhibits glycolysis and induces oxidative phosphorylation in hepatocellular carcinoma and sensitizes to metformin. *Nat Commun*, 9:446, 2018 (Journal Impact Factor: 14.9) ***(co-corresponding author)***

21. [62] Long CP, Gonzalez JE, Feist AM, Palsson BO, **Antoniewicz MR**. Dissecting the genetic and metabolic mechanisms of adaptation to the knockout of a major metabolic enzyme in *Escherichia coli*. *Proc Natl Acad Sci U S A*, 115(1): 222-227, 2018 (Journal Impact Factor: 11.2) ***(corresponding author)***

22. [54] Gonzalez JE, Bennett RK, Papoutsakis ET, **Antoniewicz MR**. Methanol assimilation in *Escherichia coli* is improved by co-utilization of threonine and deletion of leucine-responsive regulatory protein. *Metab Eng*, 45: 67-74, 2018 (Journal Impact Factor: 9.7) ***(corresponding author)***

23. [65] Bennett RK, Gonzalez JE, Whitaker WB, **Antoniewicz MR**, Papoutsakis ET. Expression of heterologous non-oxidative pentose phosphate pathway from *Bacillus methanolicus* and phosphoglucose isomerase deletion improves methanol assimilation and metabolite production by a synthetic *Escherichia coli* methylotroph. *Metab Eng*, 45: 75-85, 2018 (Journal Impact Factor: 9.7)

24. [57] Long CP, Gonzalez JE, Cipolla RM, **Antoniewicz MR**. Metabolism of the fast-growing bacterium *Vibrio natriegens* elucidated by ^{13}C metabolic flux analysis. *Metab Eng*, 44: 191-197, 2017 (Journal Impact Factor: 9.7) ***(corresponding author)***

25. [24] Cordova LT, Cipolla RM, Swarup A, Long CP, **Antoniewicz MR**. ^{13}C metabolic flux analysis of three divergent extremely thermophilic bacteria: *Geobacillus* sp. LC300, *Thermus thermophilus* HB8, and *Rhodothermus marinus* DSM 4252. *Metab Eng*, 44: 182-190, 2017 (Journal Impact Factor: 9.7) ***(corresponding author)***

26. [39] Zuniga C, Levering J, **Antoniewicz MR**, Guarnieri MT, Betenbaugh MJ, Zengler K. Predicting dynamic metabolic demands in the photosynthetic eukaryote *Chlorella vulgaris*. *Plant Physiol*, 176: 450-462, 2017 (Journal Impact Factor: 8.3)

27. [47] Long CP, Gonzalez JE, Feist AM, Palsson BO, **Antoniewicz MR**. Fast growth phenotype of *E. coli* K-12 from adaptive laboratory evolution does not require intracellular flux rewiring. *Metab Eng*, 44: 100-107, 2017 (Journal Impact Factor: 9.7) ***(corresponding author)***

28. [34] Long CP, Au J, Sandoval NR, Gebreselassie NA, **Antoniewicz MR**. Enzyme I facilitates reverse flux from pyruvate to phosphoenolpyruvate in *Escherichia coli*. *Nat Commun*, 8:14316, 2017 (Journal Impact Factor: 14.9) ***(corresponding author)***

29. [87] Gonzalez JE, Long CP, **Antoniewicz MR**. Comprehensive analysis of glucose and xylose metabolism in *Escherichia coli* under aerobic and anaerobic conditions by ^{13}C metabolic flux analysis. *Metab Eng*, 39: 9-18, 2017 (Journal Impact Factor: 9.7) ***(corresponding author)***

30. [137] Whitaker WB, Jones JA, Bennett K, Gonzalez JE, Vernacchio VR, Collins SM, Palmer MA, Schmidt S, **Antoniewicz MR**, Koffas MA, Papoutsakis ET. Engineering the Biological Conversion of Methanol to Specialty Chemicals in *Escherichia coli*. *Metab Eng*, 39:49-59, 2017 (Journal Impact Factor: 9.7)

31. [26] Gonzalez JE, **Antoniewicz MR**. Tracing metabolism from lignocellulosic biomass and gaseous substrates to products with stable-isotopes. *Curr Opin Biotechnol*, 43: 86-95, 2017 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

32. [18] Crown SB, Kelleher JK, Rouf R, Muoio DM, **Antoniewicz MR**. Comprehensive metabolic modeling of multiple ^{13}C-isotopomer data sets to study metabolism in perfused working hearts. *Am J Physiol Heart Circ Physiol*, 311(4): H881-H891, 2016 (Journal Impact Factor: 4.7)

33. [95] Jones SW, Fast AG, Carlson ED, Wiedel CA, Au J, **Antoniewicz MR**, Papoutsaks ET, Tracy BP. CO_2 fixation by anaerobic non-photosynthetic mixotrophy for improved carbon conversion. *Nat Commun*, 7:12800, 2016 (Journal Impact Factor: 14.9)

34. [46] Long CP, Au J, Gonzalez JE, **Antoniewicz MR**. ^{13}C metabolic flux analysis of microbial and mammalian systems is enhanced with GC-MS measurements of glycogen and RNA labeling. *Metab Eng*, 38: 65–72, 2016 (Journal Impact Factor: 9.7) ***(corresponding author)***

35. [79] Zuniga C, Li CT, Huelsman T, Levering J, Zielinski DC, McConnell BO, Long CP, Knoshaug EP, Guarnieri MT, **Antoniewicz MR**, Betenbaugh MJ, Zengler K. Genome-scale metabolic model for the green alga *Chlorella vulgaris* UTEX 395 accurately predicts phenotypes under autotrophic, heterotrophic, and mixotrophic growth conditions. *Plant Physiol*, 172(1): 589-602, 2016 (Journal Impact Factor: 8.3)

36. [37] Diaz-Moralli S, Aguilar E, Marin S, Coy JF, Dewerchin M, **Antoniewicz MR**, Meca-Cortes O, Notebaert L, Ghesquiere B, Eelen G, Thomson TM, Carmeliet P, Cascante M. A key role for transketolase-like 1 in tumor metabolic reprogramming. *Oncotarget*, 10429, 2016 (Journal Impact Factor: 3.3)

37. [65] Crown SB, Long CP, **Antoniewicz MR**. Optimal tracers for parallel labeling experiments and ^{13}C metabolic flux analysis: A new precision and synergy scoring system. *Metab Eng*, 38: 10-18, 2016 (Journal Impact Factor: 9.7) ***(corresponding author)***

38. [58] Long CP, Gonzalez JE, Sandoval NR, **Antoniewicz MR**. Characterization of physiological responses to 22 gene knockouts in *Escherichia coli* central carbon metabolism. *Metab Eng*, 37: 102–113, 2016 (Journal Impact Factor: 9.7) ***(corresponding author)***

39. [30] Ahn WS, Crown SB, **Antoniewicz MR**. Evidence for transketolase-like TKTL1 flux in CHO cells based on parallel labeling experiments and ^{13}C-metabolic flux analysis. *Metab Eng*, 37: 72–78, 2016 (Journal Impact Factor: 9.7) ***(corresponding author)***

40. [25] Cordova LT, Lu J, Cipolla RM, Sandoval NR, Long CP, **Antoniewicz MR**. Co-utilization of glucose and xylose by evolved *Thermus thermophilus* LC113 strain elucidated by ^{13}C metabolic flux analysis and whole genome sequencing. *Metab Eng*, 37: 63–71, 2016 (Journal Impact Factor: 9.7) ***(corresponding author)***

41. [38] McConnell BO, **Antoniewicz MR**. Measuring the composition and stable-isotope labeling of algal biomass carbohydrates by gas chromatography/mass spectrometry. *Anal Chem*, 88(9): 4624–4628, 2016 (Journal Impact Factor: 7.0) ***(corresponding author)***

42. [46] Sandberg TE, Long CP, Gonzalez JE, Feist AM, **Antoniewicz MR**, Palsson BO. Evolution of *E. coli* on [U-^{13}C]glucose reveals a negligible isotopic influence on metabolism and physiology. *PLoS One*, 11(3): e0151130, 2016 (Journal Impact Factor: 3.2)

43. [26] Yao M, Elling FJ, Jones CA, Nomosatryo S, Long CP, Crowe SA, **Antoniewicz MR**, Hinrichs KU, Maresca JA. Heterotrophic bacteria from an extremely phosphate-poor lake have conditionally reduced phosphorus demand and utilize diverse sources of phosphorus. *Environ Microbiol*, 18(2): 656–667, 2016 (Journal Impact Factor: 4.9)

44. [49] Cordova LT, **Antoniewicz MR**. ^{13}C Metabolic flux analysis of the extremely thermophilic, fast growing, xylose-utilizing *Geobacillus* strain LC300. *Metab Eng,* 33: 148-157, 2016 (Journal Impact Factor: 9.7) ***(corresponding author)***

45. [127] Crown SB, Marze N, **Antoniewicz MR**. Catabolism of Branched Chain Amino Acids Contributes Significantly to Synthesis of Odd-chain and Even-chain Fatty Acids in 3T3-L1 Adipocytes. *PLoS One*, 10(12): e0145850, 2015 (Journal Impact Factor: 3.2) ***(corresponding author)***

46. [49] **Antoniewicz MR**. Parallel labeling experiments for pathway elucidation and ^{13}C metabolic flux analysis. *Curr Opin Biotechnol,* 36: 91-97, 2015 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

47. [61] Gebreselassie NA, **Antoniewicz MR**. ^{13}C-Metabolic flux analysis of co-cultures: A novel approach. *Metab Eng*, 31: 132-139, 2015 (Journal Impact Factor: 9.7) ***(corresponding author)***

48. [27] Cordova LT, Long CP, Venkataramanan KP, **Antoniewicz MR**. Complete genome sequence, metabolic model construction and phenotypic characterization of *Geobacillus*

LC300, an extremely thermophilic, fast growing, xylose-utilizing bacterium. *Metab Eng*, 32: 74-81, 2015 (Journal Impact Factor: 9.7) ***(corresponding author)***

49. [434] Buescher JM, **Antoniewicz MR**, […37 co-authors]. A roadmap for interpreting ^{13}C metabolite labeling patterns from cells. *Curr Opin Biotechnol*, 34: 189-201, 2015 ***[invited review article]*** (Journal Impact Factor: 9.7)

50. [178] **Antoniewicz MR**. Methods and advances in metabolic flux analysis: A mini-review. *J Ind Microbiol Biotechnol*, 42(3): 317-325, 2015 ***[invited review article]*** (Journal Impact Factor: 3.3) ***(corresponding author)***

51. [90] Crown SB, Long CP, **Antoniewicz MR**. Integrated ^{13}C-metabolic flux analysis of 14 parallel labeling experiments in *Escherichia coli*. *Metab Eng*, 28: 151-158, 2015 (Journal Impact Factor: 9.7) ***(corresponding author)***

52. [59] Au J, Choi J, Jones SW, Venkataramanan KP, **Antoniewicz MR**. Parallel labeling experiments validate Clostridium acetobutylicum metabolic network model for ^{13}C metabolic flux analysis. *Metab Eng*, 26: 23-33, 2014 (Journal Impact Factor: 9.7) ***(corresponding author)***

53. [75] Long CP, **Antoniewicz MR**. Quantifying biomass composition by gas chromatography/mass spectrometry. *Anal Chem*, 86(19): 9423-7, 2014 (Journal Impact Factor: 7.0) ***(corresponding author)***

54. [45] Swarup A, Lu J, DeWoody KC, **Antoniewicz MR**. Metabolic network reconstruction, growth characterization and ^{13}C-metabolic flux analysis of the extremophile *Thermus thermophilus* HB8. *Metab Eng*, 24: 173-180, 2014 (Journal Impact Factor: 9.7) ***(corresponding author)***

55. [54] Long CP, **Antoniewicz MR**. Metabolic flux analysis of *Escherichia coli* knockouts: lessons from the Keio collection and future outlook. *Curr Opin Biotechnol*, 28: 127-133, 2014 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

56. [117] He L, Xiao Y, Gebreselassie N, Zhang F, **Antoniewicz MR**, Tang YJ, Peng L. Central metabolic responses to the overproduction of fatty acids in *Escherichia coli* based on ^{13}C-metabolic flux analysis. *Biotechnol Bioeng*,111(3): 575-585, 2014 (Journal Impact Factor: 4.0) ***(co-corresponding author)***

57. [100] **Antoniewicz MR**. Dynamic metabolic flux analysis – tools for probing transient states of metabolic networks. *Curr Opin Biotechnol*, 24(6): 976-978, 2013 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

58. [102] **Antoniewicz MR**. ^{13}C metabolic flux analysis: optimal design of isotopic labeling experiments. *Curr Opin Biotechnol*, 24(6): 1116-1121, 2013 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

59. [96] Crown SB, **Antoniewicz MR**. Publishing ^{13}C metabolic flux analysis studies: A review and future perspectives. *Metab Eng*, 20: 42-48, 2013 ***[review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

60. [100] Leighty RW, **Antoniewicz MR**. COMPLETE-MFA: Complementary parallel labeling experiments technique for metabolic flux analysis. *Metab Eng*, 20: 49-55, 2013 (Journal Impact Factor: 9.7) ***(corresponding author)***

61. [78] Crown SB, **Antoniewicz MR**. Parallel labeling experiments and metabolic flux analysis: Past, present and future methodologies. *Metab Eng*, 16: 21-32, 2013 ***[review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

62. [59] **Antoniewicz MR**. Tandem mass spectrometry for measuring stable-isotope labeling. *Curr Opin Biotechnol*, 24(1): 48-53, 2013 ***[invited review article]*** (Journal Impact Factor: 9.7) ***(corresponding author)***

63. [165] Ahn WS, **Antoniewicz MR**. Parallel labeling experiments with [1,2-^{13}C]glucose and [U-^{13}C]glutamine provide new insights into CHO cell metabolism. *Metab Eng*, 15: 34-47, 2013 (Journal Impact Factor: 9.7) ***(corresponding author)***

64. [22] **Antoniewicz MR**. Using multiple tracers for ^{13}C metabolic flux analysis. *Methods Mol Biol*, 985: 353-365, 2013 ***[invited book chapter] (corresponding author)***

65. [100] Leighty RW, **Antoniewicz MR**. Parallel labeling experiments with [U-^{13}C]glucose validate *E. coli* metabolic network model for ^{13}C metabolic flux analysis. *Metab Eng,* 14(5): 533-541, 2012 (Journal Impact Factor: 9.7) ***(corresponding author)***

66. [96] Crown SB, **Antoniewicz MR**. Rational design of ^{13}C-labeling experiments for metabolic flux analysis in mammalian cells. *BMC Syst Biol*, 6:43, 2012 (Journal Impact Factor: 2.0) ***(corresponding author)***

67. [72] Choi J, Grossbach MT, **Antoniewicz MR**. Measuring complete isotopomer distribution of aspartate using gas chromatography tandem mass spectrometry. *Anal Chem*, 84(10): 4628-4632, 2012 (Journal Impact Factor: 7.0) ***(corresponding author)***

68. [81] Crown SB, **Antoniewicz MR**. Selection of Tracers for ^{13}C-Metabolic Flux Analysis using Elementary Metabolite Unit (EMU) Basis Vectors. *Metab Eng*, 14(2): 150-161, 2012 (Journal Impact Factor: 9.7) ***(corresponding author)***

69. [141] Ahn WS, **Antoniewicz MR**. Towards dynamic metabolic flux analysis in CHO cell cultures. *Biotechnol J*, 7(1): 61-74, 2012 ***[invited review article]*** (Journal Impact Factor: 3.5) ***(corresponding author)***

70. [111] Leighty RW, **Antoniewicz MR**. Dynamic Metabolic Flux Analysis (DMFA): A Framework for Determining Fluxes at Metabolic Non-Steady State. *Metab Eng*, 13(6): 745-755, 2011 (Journal Impact Factor: 9.7) ***(corresponding author)***

71. [265] Ahn WS, **Antoniewicz MR**. Metabolic flux analysis of CHO cells at growth and non-growth phases using isotopic tracers and mass spectrometry. *Metab Eng*, 13(5): 598-609, 2011 (Journal Impact Factor: 9.7) ***(corresponding author)***

72. [106] **Antoniewicz MR**, Kelleher JK, Stephanopoulos G. Measuring deuterium enrichment of glucose hydrogen atoms by gas chromatography mass spectrometry. *Anal Chem*, 83 (8): 3211–3216, 2011 (Journal Impact Factor: 7.0)

73. [97] Choi J, **Antoniewicz MR**. Tandem mass spectrometry: a novel approach for metabolic flux analysis. *Metab Eng*, 13(2): 225-233, 2011 (Journal Impact Factor: 9.7) ***(corresponding author)***

74. [93] Crown SB, Indurthi DC, Ahn WS, Choi J, Papoutsakis ET, **Antoniewicz MR**. Resolving the TCA cycle and pentose phosphate pathway of Clostridium acetobutylicum ATCC 824 using isotopomer analysis, in vitro Re-citrate synthase activities and expression analysis. *Biotechnol J*, 6(3): 300-305, 2011 (Journal Impact Factor: 3.5) ***(corresponding author)***

75. [25] Reed JL, Senger RS, **Antoniewicz MR**, Young JD. Computational Approaches in Metabolic Engineering. *J Biomed Biotechnol*, 2010:207414, 2010 (Journal Impact Factor: 5.2)

76. [179] Moxley JF*, Jewett MC*, **Antoniewicz MR***, Villas-Boas SG*, Alper H, Wheeler RT, Tong L, Hinnebusch AG, Ideker T, Nielsen J, Stephanopoulos G. Linking high resolution metabolic flux phenotypes and transcriptional regulation in yeast modulated by the global regulator Gcn4p. *Proc Natl Acad Sci U S A*, 106(16): 6477-82, 2009 (* equal contribution) (Journal Impact Factor: 11.2)

77. [298] Yoo H*, **Antoniewicz MR***, Stephanopoulos G, Kelleher JK. Quantifying reductive carboxylation flux of glutamine to lipid in brown adipocyte cell line. *J Biol Chem*, 283(30): 20621-7, 2008 (* equal contribution) (Journal Impact Factor: 5.1)

78. [267] Young JD, Walther JL, **Antoniewicz MR**, Yoo H, Stephanopoulos G. An Elementary Metabolite Unit (EMU) based method of isotopically nonstationary flux analysis. *Biotechnol Bioeng*, 99(3): 686-699, 2008 (Journal Impact Factor: 4.0)

79. [260] **Antoniewicz MR**, Kelleher JK, Stephanopoulos G. Accurate assessment of amino acid mass isotopomer distributions for metabolic flux analysis. *Anal Chem* 79(19): 7554-9, 2007 (Journal Impact Factor: 7.0)

80. [252] **Antoniewicz MR**, Kraynie DF, Laffend LA, González-Lergier J, Kelleher JK, Stephanopoulos G. Metabolic flux analysis in a nonstationary system: fed-batch fermentation of a high yielding strain of E. coli producing 1,3-propanediol. *Metab Eng* 9(3): 277-92, 2007 (Journal Impact Factor: 9.7)

81. [561] **Antoniewicz MR**, Kelleher JK, Stephanopoulos G. Elementary Metabolite Units (EMU): A novel framework for modeling isotopic distributions. *Metab Eng* 9(1): 68-86, 2007 (Journal Impact Factor: 9.7)

82. [437] **Antoniewicz MR**, Kelleher JK, Stephanopoulos G. Determination of confidence intervals of metabolic fluxes estimated from stable isotope measurements. *Metab Eng* 8(4): 324-337, 2006 (Journal Impact Factor: 9.7)

83. [47] **Antoniewicz MR**, Stephanopoulos G, Kelleher JK. Evaluation of regression models in metabolic physiology: Predicting fluxes from isotopic data without knowledge of the pathway. *Metabolomics* 2(1): 41-52, 2006 (Journal Impact Factor: 3.1)

84. [83] van Gulik WM, **Antoniewicz MR**, de Laat WT, Vinke JL, Heijnen JJ. Energetics of growth and penicillin production in a high-producing strain of *Penicillium chrysogenum*. *Biotechnol Bioeng* 72(2): 185-93, 2001 (Journal Impact Factor: 4.0)

INVITED PRESENTATIONS AND LECTURES

Invited Presentations since Employment at the University of Michigan

1. Univ. of Texas Southwestern Medical Center, Dallas, TX. – postponed due to COVID-19
   Invited Seminar Speaker

2. UCLA, Chemical and Biomolecular Eng., Los Angeles, CA. – postponed due to COVID-19
   Invited Seminar Speaker

3. ACS BIOT Meeting – postponed due to COVID-19
   Invited Keynote Speaker

4. Metabolic Engineering 14 Conference (virtual conference) July 2021
   Invited Speaker *"Metabolic flux responses to deletion of 46 core enzymes reveals flexibility and limits of E. coli metabolism"*

5. University of Michigan, Department of Biomedical Engineering, Ann Arbor, MI. Nov 2020
   Invited Speaker *"Towards a Holistic Understanding of Metabolism"*

Invited Presentations since Employment at the University of Delaware

6. University of Michigan, Department of Chemical Engineering, Ann Arbor, MI. Feb 2019
   Invited Speaker *"Towards a Holistic Understanding of Metabolism"*

7. University of Houston, Dept. of Chemical & Biomolecular Eng, Houston, TX. Sept 2018
   Invited Speaker *"Measuring Metabolism in Microbial Communities"*

8. University of Michigan, Department of Chemical Engineering, Ann Arbor, MI. Sept 2018
   Invited Speaker *"Measuring Metabolism in Microbial Communities"*

9. DSM Nutritional Products, Columbia, MD. July 2018
   Invited Speaker *"Metabolite Cross-Feeding Drives the Symbiotic Growth of Algae and Microbes"*

10. Manus Bio, Cambridge, MA. May 2018
    Invited Speaker *"^{13}C flux analysis of E. coli knockout strains"*

11. Massachusetts Institute of Technology, Dept. of Chemical Eng., Cambridge, MA. Nov 2017
    Invited Speaker *"Measuring Metabolism in Microbial Communities"*

12. AIChE Annual Meeting 2017. Minneapolis, MN. Oct 2017
    Invited Keynote Speaker *"Metabolite Cross-Feeding Drives the Symbiotic Growth of Chlorella vulgaris and Heterotrophic Microbes"*

13. UC San Diego, Bioengineering Department, San Diego, CA. Oct 2017
Invited Speaker *"Measuring Cellular Metabolism in Microbial Communities"*

14. Genomatica, San Diego, CA. Oct 2017
Invited Speaker *"^{13}C-flux analysis of E. coli knockout strains"*

15. University of Minnesota, Biotechnology Institute, St Paul, MN. Sept 2017
Invited Speaker *"Measuring Cellular Metabolism in Microbial Communities"*

16. BD Life Sciences. Cockeysville, MD. May 2017
Invited Speaker *"Measuring metabolism of CHO cells using ^{13}C flux analysis"*

17. University of Pittsburgh, Dept. of Chemical and Petroleum Eng. Pittsburgh, PA. April 2017
Invited Speaker *"Toward a holistic understanding of cellular metabolism"*

18. University of Connecticut, Dept. of Chemical & Biomolecular Eng. Storrs, CT. March 2017
Invited Speaker *"Advances in ^{13}C Metabolic Flux Analysis"*

19. Penn State University, Department of Chemical Engineering. University Park, PA. Oct 2016
Invited Speaker *"Toward a holistic understanding of cellular metabolism"*

20. Merck, Inc. Kenilworth, NJ. Sept 2016
Invited Speaker *"Measuring metabolism of CHO cells using ^{13}C flux analysis"*

21. Osaka University, Department of Bioinformatic Engineering. Japan. July 2016
Invited Speaker *"Toward a holistic understanding of cellular metabolism through integrated ^{13}C flux analysis"*

22. Metabolic Engineering 11 Conference. Awaji Island, Japan. June 2016
Invited Speaker "*Advances in ^{13}C Metabolic Flux Analysis: Co-Culture MFA and New Pathway Discovery"*

23. Bristol-Myers Squibb, Bloomsbury, NJ. June 2016
Invited Speaker *"Measuring metabolism of CHO cells using ^{13}C flux analysis"*

24. University of Illinois at Chicago, Dept. of Biochemistry & Molecular Genetics. Sept 2015
Invited Speaker *"Measuring Metabolic Fluxes in Mammalian Cells"*

25. Society for Industrial Microbiology & Biotechnology (SIMB), Philadelphia, PA. Aug 2015
Invited Speaker *"*Advances in ^{13}C metabolic flux analysis: COMPLETE-MFA*"*

26. ACS BIOT Meeting, Denver, CO. March 2015
Invited Award Lecture *"Toward a holistic understanding of cellular metabolism"*

27. University of Maryland, Baltimore County, Dept. Chemistry & Biochemistry. March 2015
Invited Speaker *"Measuring Metabolic Fluxes in Living Cells using ^{13}C-Tracers and Mass Spectrometry"*

28. Duke Univ., Sarah W. Stedman Nutrition & Metabolism Center. Durham, NC. June 2014

Invited Speaker *"Metabolic Flux Rewiring in Mammalian Cells Determined using 13C-Metabolic Flux Analysis"*

29. University of Pennsylvania, Cancer Cell Metabolism Meeting, Philadelphia, PA. March 2014
Invited Speaker *"Metabolic Flux Rewiring in Mammalian Cells"*

30. Metabolic Origins of Disease Symposium. Orlando, FL. March 2014
Invited Speaker *"Recent advances in measuring intracellular fluxes using stable-isotopes, mass spectrometry and ^{13}C-metabolic flux analysis"*

31. Florida State University, Dept. of Chemistry & Biochemistry. Tallahassee, FL. Feb 2014
Invited Speaker *"Measuring Metabolic Fluxes in Living Cells using ^{13}C-Tracers and Mass Spectrometry"*

32. Delft University of Technology, Department of Biotechnology. The Netherlands. Nov 2013
Invited Lecturer *"Tandem mass spectrometry and stable isotopes quantify fluxes in complex biological systems"*

33. UD Chemical & Biomolecular Engineering Winter Research Review. Newark, DE. Jan 2013
Invited Speaker *"Study of metabolism using stable-isotopes"*

34. DSM Biotechnology Center, Delft, The Netherlands. Nov 2012
Invited Speaker *"Parallel Labeling Experiments for ^{13}C-Metabolic Flux Analysis"*

35. Delft University of Technology, Department of Biotechnology. The Netherlands. Nov 2012
Invited Lecturer *"Tandem mass spectrometry and stable isotopes quantify fluxes in complex biological systems"*

36. University of Delaware's Francis Alison Society Meeting. Newark, DE. Oct 2013
Invited Speaker *"Metabolism and stable-isotopes"*

37. North Carolina Biotechnology Center, Cell Culture Symposium. Durham, NC. Oct 2012
Invited Speaker *"Towards dynamic metabolic flux analysis in CHO cell cultures"*

38. Donald Danforth Center's 14th Annual Symposium. St. Louis, MO. Sept 2012
Invited Speaker *"Metabolism in motion: towards dynamic ^{13}C-metabolic flux analysis"*

39. The Bioprocessing Summit, Optimizing Cell Culture Technology. Boston, MA. Aug 2012
Invited Speaker *"Towards dynamic metabolic flux analysis in CHO cell cultures"*

40. Society for Industrial Microbiology & Biotechnology (SIMB), Washington, DC. Aug 2012
Invited Speaker *"Novel tools for ^{13}C-metabolic flux analysis: tandem mass spectrometry and parallel labeling experiments"*

41. KU Leuven, Vesalius Research Center, Leuven, Belgium. July 2012
Invited Speaker *"Metabolic flux analysis using tandem mass spectrometry and stable-isotopes"*

42. University of Delaware, Department of Math Sciences. Newark, DE. Apr 2012
Invited Speaker *"Measuring Metabolic Fluxes in Living Cells using ^{13}C-Tracer Experiments"*

43. University of Wisconsin-Madison, Chemical and Biological Eng. Madison, WI. Feb 2012
Invited Speaker *"Measuring Metabolic Fluxes in Living Cells using ^{13}C-Tracers and Mass Spectrometry"*

44. University of Delaware, Department of Animal and Food Science. Newark, DE. Nov 2011
Invited Speaker *"Measuring metabolic fluxes in living cells using ^{13}C-tracers and mass spectrometry"*

45. Delft University of Technology, Department of Biotechnology. The Netherlands. Oct 2011
Invited Lecturer *"Tandem Mass Spectrometry and Stable Isotopes Quantify Fluxes of Pyruvate Cycles"*

46. Sanford Burnham Medical Research Institute. La Jolla, CA. May 2011
Invited Speaker *"Metabolic Flux Analysis in Mammalian Cells using Stable Isotopes and Mass Spectrometry"*

47. MedImmune, LLC. Gaithersburg, MD. May 2011
Invited Speaker *"Metabolic Flux Analysis in Mammalian Cells using Stable Isotopes and Mass Spectrometry"*

48. U. of Oklahoma, Dept. of Chemical, Biological and Materials Eng. Norman, OK. Sept 2010
Invited Speaker "*Mass spectrometry tools for metabolic network reconstruction and advanced flux analysis"*

49. Metabolic Engineering VIII Conference. Jeju Island, Korea. June 2010
Invited Speaker "*Tandem mass spectrometry tools for metabolic network reconstruction and flux analysis"*

50. Bioinformatics and Bioengineering Conference (BIBE), Philadelphia, PA. June 2010
Invited Speaker "*Tandem mass spectrometry tools for measuring metabolic fluxes"*

51. E. I. DuPont de Nemours, Horizons in Biotechnology Seminar. Wilmington, DE. Apr 2010
Invited Speaker *"Tandem Mass Spectrometry Tools for Measuring Metabolic Fluxes"*

52. Princeton University, Department of Chemical Engineering, Princeton, NJ. Apr 2010
Invited Speaker *"Tandem Mass Spectrometry Tools for Measuring Metabolic Fluxes in Living Cells"*

53. Amyris Biotechnologies. Emeryville, CA. Dec 2008
Invited Speaker *"Advanced methods for measuring metabolic fluxes"*

54. Univ. of Delaware, Chemistry-Biology Interface Seminar Series. Newark, DE. Apr 2008
Invited Speaker *"Elucidating cellular physiology by mass spectrometry and flux analysis"*

55. Delaware Biotechnology Institute, DBI Seminar Series. Newark, DE. Dec 2007
Invited Speaker *"Elucidating cellular physiology by mass spectrometry and flux analysis"*

56. E. I. DuPont de Nemours, Horizons in Biotechnology Seminar. Wilmington, DE. Dec 2007
Invited Speaker *"Elucidating intracellular fluxes by mass spectrometry and flux analysis"*

Invited Presentations prior to Employment at the University of Delaware

57. 2nd International Metabolomics Symposium. Louisville, KY. Mar 2007
Invited Speaker *"Elementary metabolite units: A novel framework for modeling isotopic tracer distributions and estimating fluxes"*

58. Univ. of Maryland, Dept. of Chemical & Biomolecular Eng. College Park, MD. Mar 2007
Invited Speaker *"Quantifying cellular physiology by mass spectrometry and flux analysis"*

59. University of Delaware, Department of Chemical Engineering. Newark, DE. Feb 2007
Invited Speaker *"Quantifying cellular physiology by mass spectrometry and flux analysis"*

60. NIH, Brain Physiology and Metabolism Section. Bethesda, MD. Jan 2007
Invited Speaker *"Analysis of gluconeogenesis in mice using doubly-labeled glycerol and GC/MS analysis"*

61. E. I. DuPont de Nemours, Central Research & Development. Wilmington, DE. June 2006
Invited Speaker *"Analysis of metabolic pathways using stable isotope tracers"*

62. Duke Univ., Sarah W. Stedman Nutrition & Metabolism Center. Durham, NC. Oct 2005
Invited Speaker *"Flux analysis by mass spectrometry based isotopomer analysis"*

63. Broad Institute of MIT and Harvard, Metabolism Initiative. Cambridge, MA. Jan 2005
Invited Speaker *"Use of stable isotopes for the analysis of cell physiology"*

64. 7th Int. Meeting of Microarray Gene Expression Data Society. Toronto, Canada. Sept 2004
Invited Speaker *"Quantifying cell physiology using metabolic flux analysis"*

65. E. I. DuPont de Nemours, Central Research & Development. Wilmington, DE. Nov 2003
Invited Speaker *"Comprehensive analysis of metabolic pathways"*

PRESENTATIONS AT CONFERENCES

Presentations since Employment at the University of Michigan

1. Metabolic Engineering 14 Conference (virtual conference). July 2021 (Poster Presentation)
Har JRG, **Antoniewicz MR**. *Transcription factor dysregulation in E. coli – a fluxomic perspective.*

2. Metabolic Engineering 14 Conference (virtual conference). July 2021 (Poster Presentation)
Dahle M, Charubin K, **Antoniewicz MR**, Pepoutsakis ET. *Quantifying syntrophy in the CO2-recapturing coculture of Clostridium acetobutylicum and Clostridium ljungdahlii through ^{13}C metabolic flux analysis.*

3. Metabolic Engineering 14 Conference (virtual conference). July 2021 (Oral Presentation)
Antoniewicz MR. *Metabolic flux responses to deletion of 46 core enzymes reveals flexibility and limits of E. coli metabolism.*

4. Keystone Symposia (Diabetes: Glucose Control and Beyond), Santa Fe, NM. Jan 28, 2020 (Oral Presentation)
   Antoniewicz MR, Oates EH. *Metabolite cross-feeding interactions in adipocyte-hepatocyte co-cultures elucidated with a novel ^{13}C-metabolic flux analysis technique.*

5. Keystone Symposia (Diabetes: Glucose Control and Beyond), Santa Fe, NM. Jan 27, 2020 (Poster Presentation)
   Oates EH, **Antoniewicz MR**. *^{13}C metabolic flux analysis quantifies shifts in adipocyte metabolism during proliferation, differentiation, and under hypoxia.*

6. 2nd International Conference on Microbiome Engineering, Boston, MA. Dec 3, 2019 (Poster Presentation)
   Agee A, Bennett RK, Har JRG, **Antoniewicz MR**, Papoutsakis ET. *Rewiring Amino Acid Biosynthesis Via Regulator Modulation and Operon Overexpression Improves Methanol Utilization in a Synthetic Escherichia coli Methylotroph.*

7. AIChE Annual Meeting 2019, Minneapolis, MN. Nov 10, 2019 (Oral Presentation)
   Foster C, Gopalakrishnan S, Srinivasan S, Dash S, **Antoniewicz MR**, Maranas CD. *From 13C Labeling Data to a Core Metabolism Kinetic Model: A Kinetic Model Parameterization Pipeline.*

8. AIChE Annual Meeting 2019, Minneapolis, MN. Nov 10, 2019 (Poster Presentation)
   Wolfsberg E, **Antoniewicz MR**. *Elucidating Metabolism of E. coli double Knockout Strains.*

9. AIChE Annual Meeting 2019, Minneapolis, MN. Nov 10, 2019 (Poster Presentation)
   Agee A, Bennett RK, Har JRG, **Antoniewicz MR**, Papoutsakis ET. *Rewiring Amino Acid Biosynthesis Via Regulator Modulation and Operon Overexpression Improves Methanol Utilization in a Synthetic Escherichia coli Methylotroph.*

Presentations since Employment at the University of Delaware

10. SIMB Annual Meeting 2019. Washington, DC. July 22, 2019 (Oral Presentation)
    Har JRG, **Antoniewicz MR**. *Engineering E. coli for Methylotrophy – Insights from 13C-Isotope Tracing.*

11. SIMB Annual Meeting 2019. Washington, DC. July 22, 2019 (Poster Presentation)
    Dahle M, **Antoniewicz MR**. *Quantifying metabolite cross-feeding through 13C metabolic flux analysis: A case study using E. coli and S. enterica grown in coculture.*

12. SIMB Annual Meeting 2019. Washington, DC. July 22, 2019 (Poster Presentation)
    Dahle M, Charubin K, Papoutsakis ET, **Antoniewicz MR**. *13C-Flux analysis in complex media: quantifying intracellular fluxes for the anaerobic fermenters Clostridium acetobutylicum and Clostridium ljungdahlii.*

13. ACS BIOT Meeting. Orlando, FL. April 3, 2019 (Oral Presentation)
    McConnell BO, Gonzalez JE, **Antoniewicz MR**. *Elucidating amino acid metabolism in CHO cells.*

14. ACS BIOT Meeting. Orlando, FL. April 2, 2019 (Oral Presentation)

McConnell BO, **Antoniewicz MR**. *Elucidating fluxes in complex media: ^{13}C metabolic flux analysis of E. coli grown in the presence of yeast extract.*

15. ACS BIOT Meeting. Orlando, FL. April 2, 2019 (Oral Presentation)
Antoniewicz MR, Long CP. *Systems-level analysis of metabolic flux responses to deletion of 50 core enzymes reveals flexibility and limits of E. coli metabolism.*

16. ACS BIOT Meeting. Orlando, FL. April 2, 2019 (Poster Presentation)
Diaz CAC, **Antoniewicz MR**. *Engineering cooperation in nitrogen self-sufficient cocultures of Azotobacter vinelandii and Escherichia coli.*

17. ACS BIOT Meeting. Orlando, FL. April 2, 2019 (Poster Presentation)
Oates EH, **Antoniewicz MR**. *Metabolic cross-feeding interactions between adipocytes and hepatocytes in an engineered mammalian co-culture system.*

18. ACS BIOT Meeting. Orlando, FL. April 1, 2019 (Oral Presentation)
Diaz CAC, Bennett RK, Papoutsakis ET, **Antoniewicz MR**. *Deletion of four genes in E. coli enables preferential consumption of xylose and secretion of glucose as a valuable cross-fed nutrient in synthetic cocultures.*

19. International Conference on Microbiome Engineering. Boston, MA. Nov 2018 (Oral Presentation)
Antoniewicz MR. Integrated Multi-Scale Modeling Approach for ^{13}C Flux Analysis in Microbial Communities.

20. International Conference on Microbiome Engineering. Boston, MA. Nov 2018 (Poster Presentation)
Dahle M, **Antoniewicz MR**. Quantifying metabolite cross-feeding through ^{13}C metabolic flux analysis: A case study using *E. coli* and *Salmonella* grown in co-culture.

21. International Conference on Microbiome Engineering. Boston, MA. Nov 2018 (Poster Presentation)
Diaz CAC, **Antoniewicz MR**. Engineering altruism in nitrogen self-sufficient cocultures of *Azotobacter vinelandii* and *E. coli.*

22. AIChE Annual Meeting 2018, Minneapolis, MN. Oct 28, 2018 (Poster Presentation)
Cipolla R, **Antoniewicz MR**. *Elucidating the Metabolism of Sulfolobus Solfataricus Using ^{13}C Metabolic Flux Analysis.*

23. Undergraduate Research Symposium. Newark, DE. Aug 9, 2018 (Poster Presentation)
Wolfsberg E, **Antoniewicz MR**. *13C Metabolic Flux Analysis of E. coli Grown in Dense Colonies on Agar*.

24. Metabolic Engineering 12 Conference. Munich, Germany. June 2018 (Oral Presentation)
Antoniewicz MR, Gonzalez JE, McConnell BO, Naik HM, Dhara VG, Betenbaugh MJ. *Elucidating amino acid metabolism in CHO cells.*

25. Metabolic Engineering 12 Conference. Munich, Germany. June 2018 (Poster Presentation)
Diaz CA, **Antoniewicz MR**. *The Taming of the Germ: Engineering cooperation in nitrogen self-sufficient cocultures.*

26. Metabolic Engineering 12 Conference. Munich, Germany. June 2018 (Poster Presentation)
McConnell BO, **Antoniewicz MR**. *Metabolite Sharing Promotes Symbiotic Growth of the Green Microalga Chlorella vulgaris and Heterotrophic Microbes.*

27. Metabolic Engineering 12 Conference. Munich, Germany. June 2018 (Poster Presentation)
Oates EH, **Antoniewicz MR**. *Engineering a metabolically dynamic co-culture system between adipocytes and hepatocytes.*

28. Metabolic Engineering 12 Conference. Munich, Germany. June 2018 (Poster Presentation)
Antoniewicz MR. *13C metabolic flux analysis in microbial communities: An integrated multi-scale modeling approach.*

29. Metabolic Engineering 12 Conference. Munich, Germany. June 2018 (Poster Presentation)
Antoniewicz MR. *From genotype to fluxome to a comprehensive kinetic model of Escherichia coli.*

30. Cell Culture Engineering XVI Conference. Tampa, FL. May 2018 (Poster Presentation)
Antoniewicz MR, Gonzalez JE, McConnell BO, Naik HM, Dhara VG, Betenbaugh MJ. *Elucidating amino acid metabolism in CHO cells.*

31. Madison Microbiome Meeting (M3). Madison, WI. March 19, 2018 (Oral Presentation)
Diaz CA, **Antoniewicz MR**. *Engineering nitrogen self-sufficient cocultures.*

32. ACS BIOT Meeting. New Orleans, LA. March 19, 2018 (Oral Presentation)
Antoniewicz MR. *^{13}C-flux analysis in microbial communities: An integrated multi-scale modeling approach.*

33. ACS BIOT Meeting. New Orleans, LA. March 18, 2018 (Oral Presentation)
Antoniewicz MR. *From genotype to fluxome to a comprehensive kinetic model of E. coli.*

34. ACS BIOT Meeting. New Orleans, LA. March 18, 2018 (Oral Presentation)
Gonzalez JE, **Antoniewicz MR**. *Elucidating amino acid metabolism in CHO cells.*

35. AIChE Annual Meeting 2017, Minneapolis, MN. Oct 30, 2017 (Oral Presentation)
Antoniewicz MR. *Metabolite Cross-Feeding Drives the Symbiotic Growth of Chlorella vulgaris and Heterotrophic Microbes.*

36. AIChE Annual Meeting 2017, Minneapolis, MN. Oct 30, 2017 (Poster Presentation)
Cipolla R, **Antoniewicz MR**. *Elucidating the Metabolism of Sulfolobus Solfataricus Using ^{13}C Metabolic Flux Analysis.*

37. Undergraduate Research Symposium. Newark, DE. Aug 10, 2017 (Poster Presentation)
Cipolla R, **Antoniewicz MR**. *Metabolic flux analysis of the extreme thermophile Sulfolobus solfataricus*.

38. SIMB Annual Meeting 2017, Denver, CO. Aug 3, 2017 (Oral Presentation)
Diaz CA, **Antoniewicz MR**. *Quid pro quo: Engineering nitrogen self-sufficient co-cultures.*

39. SIMB Annual Meeting 2017, Denver, CO. Aug 3, 2017 (Oral Presentation)
Gonzalez JE, **Antoniewicz MR**. *Methanol assimilation in Escherichia coli is improved by deletion of leucine-responsive regulatory protein.*

40. SIMB Annual Meeting 2017, Denver, CO. July 31, 2017 (Oral Presentation)
McConnell BO, **Antoniewicz MR**. *Symbiotic growth of photoautotrophic and heterotrophic microorganisms.*

41. SIMB Annual Meeting 2017, Denver, CO. July 31, 2017 (Oral Presentation)
Gebreselassie NA, **Antoniewicz MR**. *Measuring dynamic interactions and metabolic fluxes in microbial communities.*

42. SIMB Annual Meeting 2017, Denver, CO. July 30, 2017 (Poster Presentation)
Diaz CA, **Antoniewicz MR**. *Quid pro quo: Engineering nitrogen self-sufficient co-cultures.*

43. SIMB Annual Meeting 2017, Denver, CO. July 30, 2017 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Interrogating E. coli central carbon metabolism via ^{13}C metabolic flux analysis of knockout strains: pathway discovery and model development.*

44. 10th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium, Newark, DE. May 6, 2017 (Poster Presentation)
Oates EH, **Antoniewicz MR**. *Applying 13C-Metabolic Flux Analysis to Investigate Metabolic Shifts in 3T3-L1 Fat Cells Under Normoxic and Hypoxic Conditions.*

45. 10th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium, Newark, DE. May 6, 2017 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Interrogating central carbon metabolism via 13C metabolic flux analysis of Escherichia coli knockout strains: pathway discovery and model development.*

46. ACS BIOT Meeting. San Francisco, CA. April 5, 2017 (Oral Presentation)
Antoniewicz MR. *Metabolic flux rewiring and physiology in E. coli knockout strains.*

47. ACS BIOT Meeting. San Francisco, CA. April 4, 2017 (Oral Presentation)
Antoniewicz MR. *Extremely thermophilic organisms for efficient glucose and xylose fermentations.*

48. ACS BIOT Meeting. San Francisco, CA. April 3, 2017 (Oral Presentation)
Antoniewicz MR. *Elucidating physiology of microbial communities through co-culture ^{13}C-metabolic flux analysis.*

49. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Oral Presentation)
Antoniewicz MR. *Advances in ^{13}C metabolic flux analysis: Co-culture MFA and new pathway discovery.*

50. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Diaz CAC, **Antoniewicz MR**. *Powering Nitrogen Fixation: the Metabolism of the Aerobic Diazotroph, Azotobacter Vinelandii, As Revealed by 13C-Metabolic Flux Analysis.*

51. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Metabolic Flux Rewiring and Physiology in E. coli Upper Central Carbon Metabolism Knockout Strains.*

52. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)

Gonzalez J, Whitaker WB, Bennett RK, Papoutsakis ET, **Antoniewicz MR**. *Bioconversion of Methane to Butanol By Metabolic Engineering of Methanosarcina Acetivorans and Escherichia coli.*

53. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Gonzalez J, **Antoniewicz MR**. *Comprehensive Analysis of Glucose and Xylose Metabolism in Escherichia coli Under Aerobic and Anaerobic Conditions By 13C-Metabolic Flux Analysis.*

54. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Au J, **Antoniewicz MR**. *Elucidation of Clostridium acetobutylicum metabolism Using Parallel Labeling Experiments and 13C Metabolic Flux Analysis.*

55. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
McConnell BO, **Antoniewicz MR**. *13C Metabolic Flux Analysis of the Green Microalga Chlorella vulgaris Under Autotrophic, Mixotrophic, and Heterotrophic Conditions.*

56. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Au J, Long CP, **Antoniewicz MR**. *13C-Metabolic Flux Analysis of the Pentose Phosphate Pathway Using GC-MS Analysis of RNA and Glycogen.*

57. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Gebreselassie NA, **Antoniewicz MR**. *Elucidating Physiology of Complex Microbial Systems through Co-Culture 13C-Metabolic Flux Analysis.*

58. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Long CP, Au J, Sandoval NR, Gebreselassie NA, **Antoniewicz MR**. *A Novel Role for Enzyme I of the PTS System in E. coli during Growth on Both Glycolytic and Gluconeogenic Substrates.*

59. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Cordova L, Lu J, Cipolla R, **Antoniewicz MR**. *Extremely Thermophilic Organisms for Efficient Glucose and Xylose Fermentations.*

60. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Poster Presentation)
Zuniga C, Li CT, Huelsman T, Levering J, Zielinski DC, McConnell BO, Long CP, **Antoniewicz MR**, Betenbaugh MJ, Zengler K. *The Genome-Scale Metabolic Model for Chlorella vulgaris Utex 395 Reveals Quantitative Flux Distributions for Compartmental-Pathway Activity Under Polytrophic Growth.*

61. Metabolic Engineering XI Conference. Awaji Island, Japan. Jun 2016 (Oral Presentation)
Papoutsakis ET, Whitaker WB, Bennett RK, Palmer MA, Gonzalez J, **Antoniewicz MR**, Jones JA, Koffas MAG. *Synthetic Methylotrophy: Engineering Escherichia coli for Methanol Utilization and Metabolite Production.*

62. 9th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium, Baltimore, MD. May 14, 2016 (Poster Presentation)
Gebreselassie NA, **Antoniewicz MR**. *Elucidating the Physiology of Complex Microbial Systems through a Novel Co-culture ^{13}C-Metabolic Flux Analysis.*

63. Undergraduate Research Symposium. Newark, DE. April 29, 2016 (Poster Presentation)

Cipolla R, Cordova LT, **Antoniewicz MR**. *Metabolic flux analysis of extremely thermophilic micro-organisms: Some like it hot*.

64. 3rd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2016 (Poster Presentation)
Gonzalez JE, **Antoniewicz MR**. *Application of 13C-MFA in Methanosarcina acetivorans and Escherchia coli for biofuel production.*

65. 3rd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2016 (Poster Presentation)
Au J, **Antoniewicz MR**. *Elucidation of Clostridium acetobutylicum metabolism using parallel labeling experiments and ^{13}C metabolic flux analysis.*

66. 3rd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2016 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Comprehensive study of metabolic flux rewiring in E. coli knockout strains.*

67. 3rd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2016 (Poster Presentation)
Gebreselassie NA, **Antoniewicz MR**. *Elucidating the physiology of complex microbial systems through a novel co-culture ^{13}C-metabolic flux analysis.*

68. 3rd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2016 (Poster Presentation)
McConnell B, **Antoniewicz MR**. *Characterization of microalgal growth in autotrophic, heterotrophic, and mixotrophic conditions.*

69. 3rd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2016 (Poster Presentation)
Diaz C, **Antoniewicz MR**. *Powering nitrogen fixation: the metabolism of the soil diazotroph, Azotobacter vinelandii, as revealed by ^{13}C-metabolic flux analysis.*

70. AIChE Annual Meeting 2015, Salt Lake City, UT. Nov 2015 (Oral Presentation)
Antoniewicz MR. *Measuring Metabolism of Individual Cell Populations in Mixed Microbial Cultures.*

71. AIChE Annual Meeting 2015, Salt Lake City, UT. Nov 2015 (Oral Presentation)
Papoutsakis ET, Whitaker B, Bennett K, Gonzalez J, Sandoval N, Falara V, **Antoniewicz MR**. *Making Escherichia coli Grow on Methanol.*

72. Undergraduate Research Symposium. Newark, DE. Aug 13, 2015 (Poster Presentation)
Cipolla R, Cordova LT, **Antoniewicz MR**. *Metabolic flux analysis of two extreme thermophiles: Thermus thermophilus and Rhodothermus marinus*.

73. SIMB Annual Meeting 2015, Philadelphia, PA. Aug 2015 (Oral Presentation)
Au J, **Antoniewicz MR**. *^{13}C metabolic flux analysis identifies a novel metabolic cycle in Clostridium acetobutylicum that involves central carbon and amino acid metabolism.*

74. SIMB Annual Meeting 2015, Philadelphia, PA. Aug 2015 (Oral Presentation)
Gonzalez J, **Antoniewicz MR**. *Bioconversion of methane to butanol by metabolic engineering of Methanosarcina acetivorans and Escherichia coli.*

75. SIMB Annual Meeting 2015, Philadelphia, PA. Aug 2015 (Poster Presentation)
Au J, Keerthi P. Venkataramanan, Gonzalez, J, **Antoniewicz MR**. *Qualitative ^{13}C-isotopomer analysis characterizes short term and long term effects of butanol and butyric acid stress on the metabolism of Clostridium acetobutylicum.*

76. SIMB Annual Meeting 2015, Philadelphia, PA. Aug 2015 (Oral Presentation)
Papoutsakis ET, Whitaker B, Bennett K, Gonzalez J, Sandoval N, Falara V, **Antoniewicz MR**. *The Importance of and a Strategy for Synthetic Methylotrophy.*

77. ECI Biochemical and Molecular Engineering XIX, Mexico. July 2015 (Oral Presentation)
Antoniewicz MR. *Measuring metabolism of individual cell populations in mixed microbial cultures: A novel approach.*

78. ECI Biochemical and Molecular Engineering XIX, Mexico. July 2015 (Poster Presentation)
Antoniewicz MR. *Simultaneous glucose/xylose co-utilization by an evolved Thermus thermophilus strain elucidated by genome sequencing and 13C metabolic flux analysis.*

79. 8th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium, Baltimore, MD. May 16, 2015 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Comprehensive study of metabolic flux rewiring in E. coli knockout strains.*

80. ACS BIOT Meeting. Denver, CO. March 24, 2015 (Oral Presentation)
Antoniewicz MR. *^{13}C metabolic flux analysis of E. coli/E. coli and E. coli/yeast co-culture.*

81. ACS BIOT Meeting. Denver, CO. March 25, 2015 (Oral Presentation)
Antoniewicz MR. *Metabolic flux analysis of the micro-algae Chlorella vulgaris at different CO_2 concentrations under autotrophic, heterotrophic, and mixotrophic growth.*

82. 2nd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2015 (Poster Presentation)
Gonzalez J, **Antoniewicz MR**. *Application of 13C-tracers in Methanosarcina acetivorans and Escherchia coli for biofuel production.*

83. 2nd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2015 (Poster Presentation)
Gebreselassie NA, **Antoniewicz MR**. *^{13}C Metabolic flux analysis of co-culture systems: a novel approach.*

84. 2nd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2015 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Comprehensive study of metabolic flux rewiring in E. coli knockout strains.*

85. 2nd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2015 (Poster Presentation)
Cordova L, **Antoniewicz MR**. *Genome Sequence, Metabolic Model Reconstruction and ^{13}C-Metabolic Flux Analysis of an Extremely Thermophilic, Fast Growing, Xylose-Consuming Geobacillus Strain LC300.*

86. 2nd UD Microbial Systems Symposium, Newark, DE. Feb 3, 2015 (Poster Presentation)
Au J, **Antoniewicz MR**. *Parallel labeling experiments: a novel approach for validating metabolic network models.*

87. AIChE Annual Meeting 2014, Atlanta, GA. Nov 17, 2014 (Oral Presentation)
Ahn WS, **Antoniewicz MR**. *Metabolic Switching of Gluconeogenesis in Hepatoma Cells*

88. AIChE Annual Meeting 2014, Atlanta, GA. Nov 16, 2014 (Poster Presentation)

Cordova L, **Antoniewicz MR**. *Genome Sequence, Metabolic Model Reconstruction and ^{13}C-Metabolic Flux Analysis of an Extremely Thermophilic, Fast Growing, Xylose-Consuming Geobacillus Strain LC300.*

89. Undergraduate Research Symposium. Newark, DE. Aug 14, 2014 (Poster Presentation)
Monian A, **Antoniewicz MR**. *Characterization of gas transfer in algae cultures and its impact on algae growth under photoautotrophic, mixotrophic and heterotrophic conditions*.

90. Metabolic Engineering X, Vancouver (Canada). June 17, 2014 (Oral Presentation)
Antoniewicz MR. *Advances in ^{13}C Metabolic Flux Analysis: COMPLETE-MFA and Co-culture MFA.*

91. Metabolic Engineering X, Vancouver (Canada). June 15, 2014 (Poster Presentation)
Long CP, **Antoniewicz MR**. *Comprehensive study of metabolic flux rewiring in E. coli knockout strains.*

92. Metabolic Engineering X, Vancouver (Canada). June 15, 2014 (Poster Presentation)
Gebreselassie NA, **Antoniewicz MR**. *^{13}C Metabolic flux analysis of co-culture systems: a novel approach.*

93. Metabolic Engineering X, Vancouver (Canada). June 15, 2014 (Poster Presentation)
Au J, **Antoniewicz MR**. *Parallel labeling experiments: a novel approach for validating metabolic network models.*

94. Metabolic Engineering X, Vancouver (Canada). June 15, 2014 (Poster Presentation)
Antoniewicz MR. *Advances in ^{13}C Metabolic Flux Analysis: COMPLETE-MFA, Co-culture MFA and Dynamic MFA.*

95. 7th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium, Baltimore, MD. May 10, 2014 (Poster Presentation)
Gebreselassie NA, **Antoniewicz MR**. *^{13}C-Metabolic flux analysis of co-culture systems: A novel approach.*

96. DOE Genomic Science Meeting, Arlington, VA. Feb 10, 2014 (Poster Presentation)
Papoutsakis ET, Meyers BC, Lee KH, **Antoniewicz MR**, Maranas CD, Huang H, Wu CH. *Experimental System-Biology Approaches for Clostridia-Based Bioenergy Production: The Metabolite Stress-Response System in Solventogenic Clostridia.*

97. Undergraduate Research Symposium. Newark, DE. Aug 1, 2013 (Poster Presentation)
Cordova L, **Antoniewicz MR**. *Growth characteristics of the extremely thermophilic bacterium Thermus thermophilus*

98. ACS BIOT Meeting. New Orleans, LA. Apr 9, 2013 (Poster Presentation)
Crown SB, **Antoniewicz MR**. *High-resolution ^{13}C-metabolic flux analysis in E. coli using novel tracers and parallel labeling experiments.*

99. ACS BIOT Meeting. New Orleans, LA. Apr 9, 2013 (Poster Presentation)
Ahn WS, **Antoniewicz MR**. *Estimation of metabolic rewiring in CHO cell culture using parallel labeling experiments.*

100. ACS BIOT Meeting. New Orleans, LA. Apr 8, 2013 (Oral Presentation)

Crown SB, **Antoniewicz MR**. *High-resolution ^{13}C-metabolic flux analysis in E. coli using novel tracers and parallel labeling experiments.*

101. DOE Genomic Science Meeting, Bathesda, MD. Feb 24, 2013 (Poster Presentation) Papoutsakis ET, Meyers BC, Lee KH, **Antoniewicz MR**, Maranas CD, Huang H, Wu CH. *Experimental System-Biology Approaches for Clostridia-Based Bioenergy Production: The Metabolite Stress-Response System in Solventogenic Clostridia.*

102. NIH COBRE Retreat at UD. Newark, DE. Jan 7, 2013 (Oral Presentation) **Antoniewicz MR**, Ahn WS. *Elucidating the role of mitochondrial transport proteins in hepatocytes.*

103. AIChE Annual Meeting 2012, Pittsburgh, PA. Oct 30, 2012 (Oral Presentation) Papoutsakis ET, Jones SW, Venkataramanan KP, Meyers BC, Kunjeti SG, McCormick KP, Lee KH, Hou S, **Antoniewicz MR**, Choi J, Au J, Maranas CD, Suthers PF, Wang Q, Huang H, Wu KH. *Development of a Metabolite Stress-Response Model in Solventogenic Clostridia by Coupling Multiple –Omic Data with a Genome-Scale Model.*

104. AIChE Annual Meeting 2012, Pittsburgh, PA. Oct 30, 2012 (Oral Presentation) **Antoniewicz MR**, Lu J, Swarup A, DeWoody KC. *Evaluating the Potential of Using the Thermophilic Bacterium Thermus Thermophilus for Biofuels Production.*

105. AIChE Annual Meeting 2012, Pittsburgh, PA. Oct 30, 2012 (Oral Presentation) **Antoniewicz MR**, Ahn WS. *Analysis of Metabolic Flux Rewiring in CHO Cells During Fed-Batch Culture.*

106. AIChE Annual Meeting 2012, Pittsburgh, PA. Oct 31, 2012 (Oral Presentation) **Antoniewicz MR**, Leighty RW. *Complete-MFA: Complementary Parallel Labeling Experiments Technique for Metabolic Flux Analysis*.

107. AIChE Annual Meeting 2012, Pittsburgh, PA. Oct 31, 2012 (Oral Presentation) **Antoniewicz MR**, Crown SB. *Rational Design of 13C-Labeling Experiments for Metabolic Flux Analysis Using Elementary Metabolite Unit-Basis Vectors (EMU-BV).*

108. AIChE Annual Meeting 2012, Pittsburgh, PA. Oct 30, 2012 (Oral Presentation) **Antoniewicz MR**, Choi J. *Tandem Mass Spectrometry: The Next Frontier in 13C-Metabolic Flux Analysis.*

109. ECI Metabolic Engineering IX, Biarritz, France. June 3, 2012 (Oral Presentation) **Antoniewicz MR**, Ahn WS. *Dynamic 13C-metabolic flux analysis and parallel labeling experiments elucidate the rewiring of metabolic fluxes in CHO cell cultures.*

110. ECI Metabolic Engineering IX, Biarritz, France. June 3, 2012 (Poster Presentation) **Antoniewicz MR**. *Novel tools for dynamic 13C-metabolic flux analysis: Tandem mass spectrometry and parallel labeling experiments.*

111. ECI Metabolic Engineering IX, Biarritz, France. June 3, 2012 (Poster Presentation) Crown SB, **Antoniewicz MR**. *Rational design of 13C-Labeling experiments for metabolic flux analysis using elementary metabolite unit-basis vectors (EMU-BV).*

112. ECI Metabolic Engineering IX, Biarritz, France. June 3, 2012 (Poster Presentation)

Leighty RW, **Antoniewicz MR**. *Advances in metabolic flux analysis: Parallel labeling experiments and dynamic metabolic flux analysis.*

113. ECI Metabolic Engineering IX, Biarritz, France. June 3, 2012 (Poster Presentation)
Choi J, Grossbach MT, **Antoniewicz MR**. *Tandem mass spectrometry: A new frontier in 13C-Metabolic flux analysis.*

114. ECI Metabolic Engineering IX, Biarritz, France. June 3, 2012 (Poster Presentation)
Ahn WS, **Antoniewicz MR**. *Estimation of metabolic rewiring of CHO cell metabolism from growth phase to non-growth phase by multiple isotopic tracers and mass spectrometry.*

115. ECI Cell Culture Engineering XIII, Scottsdale, AZ. Apr 27, 2012 (Oral Presentation)
Antoniewicz MR, Ahn WS. *Elucidating the dynamics of metabolic fluxes in CHO cell cultures using 13C-dynamic metabolic flux analysis.*

116. ECI Cell Culture Engineering XIII, Scottsdale, AZ. Apr 22, 2012 (Poster Presentation)
Ahn WS, **Antoniewicz MR**. *13C-Metabolic flux analysis reveals metabolic rewiring of CHO cell metabolism in the transition from growth phase to stationary phase.*

117. ACS BIOT Meeting, San Diego, CA. March 27, 2012 (Oral Presentation)
Antoniewicz MR, Lu J, Swarup A, DeWoody KC. *Thermus thermophilus: A model thermophilic organism for biofuels production.*

118. ACS BIOT Meeting, San Diego, CA. March 27, 2012 (Oral Presentation)
Antoniewicz MR, Leighty RW. *Validation of the metabolic network model for E. coli using [U-13C]glucose and 13C-metabolic flux analysis.*

119. ACS BIOT Meeting, San Diego, CA. March 29, 2012 (Oral Presentation)
Antoniewicz MR, Ahn WS. *Metabolic flux analysis of CHO cells in fed-batch culture.*

120. DOE Genomic Science Meeting, Bethesda, MD. Feb 27, 2012 (Poster Presentation)
Papoutsakis ET, Meyers BC, Lee KH, **Antoniewicz MR**, Maranas CD, Huang H, Wu CH. *Experimental System-Biology Approaches for Clostridia-Based Bioenergy Production: The Metabolite Stress-Response System in Solventogenic Clostridia.*

121. AIChE Annual Meeting, Minneapolis, MN. October 17, 2011 (Oral Presentation)
Antoniewicz MR, Choi J. *Metabolic Flux Analysis Using 13C-Tracers and Tandem Mass Spectrometry.*

122. AIChE Annual Meeting, Minneapolis, MN. October 17, 2011 (Oral Presentation)
Antoniewicz MR, Ahn WS. *Metabolic Flux Analysis of CHO Cells in Semi Fed-Batch Culture.*

123. AIChE Annual Meeting, Minneapolis, MN. October 18, 2011 (Oral Presentation)
Antoniewicz MR, Leighty RW. *Validation of Metabolic Network Model for E. Coli and Assumptions of 13C-Metabolic Flux Analysis and Using [U-13C]Glucose Tracer.*

124. AIChE Annual Meeting, Minneapolis, MN. October 18, 2011 (Oral Presentation)
Antoniewicz MR, Leighty RW. *Dynamic Metabolic Flux Analysis (DMFA): A Framework for Determining Fluxes At Metabolic Non-Steady State.*

125. AIChE Annual Meeting, Minneapolis, MN. October 19, 2011 (Oral Presentation)
Antoniewicz MR, Crown SB. *Quantifying Metabolism of Differentiated Adipocytes Using 13C-Metabolic Flux Analysis.*

126. AIChE Annual Meeting, Minneapolis, MN. October 19, 2011 (Oral Presentation)
Antoniewicz MR, Swarup A, DeWoody KC, Lu J. *Thermus Thermophilus as a Thermophilic Model Organism for Biofuels Production.*

127. AIChE Annual Meeting, Minneapolis, MN. October 19, 2011 (Oral Presentation)
Antoniewicz MR, Crown SB. *Design Principles for 13C-Metabolic Flux Analysis Using Elementary Metabolite Unit Basis Vectors (EMU-BV).*

128. AIChE Annual Conference, Minneapolis, MN. October 17, 2011 (Poster Presentation)
Lu J, **Antoniewicz MR**. *Analysis of Growth of Thermus Thermophilus HB8 Using Mini-Bioreactors and Defined Growth Medium without Yeast Extract.*

129. Senior Thesis Symposium. Newark, DE. May 7, 2011 (Poster Presentation)
Marze NA, **Antoniewicz MR**. *Quantifiying the Relative Contributions of Two Pathways to Odd-Chain-Length Fatty Acid Synthesis in 3T3-LI Adipoctyes.*

130. 4th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Newark, DE. April 30, 2011 (Poster Presentation)
Crown SB, Marze NA, **Antoniewicz MR**. *Quantifying Metabolism of Differentiated Adipocytes using 13C-Metabolic Flux Analysis.*

131. 4th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Newark, DE. April 30, 2011 (Poster Presentation)
Ahn WS, **Antoniewicz MR**. *Metabolic Flux Analysis of CHO Cell Metabolism Using Isotopic Tracers and Mass Spectrometry.*

132. 4th Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Newark, DE. April 30, 2011 (Poster Presentation)
Choi J, Grossbach MT, **Antoniewicz MR**. *Novel Methodologies for Metabolic Flux Analysis using Tandem Mass Spectrometry.*

133. ACS BIOT Meeting, Anaheim, CA. March 29, 2011 (Oral Presentation)
Antoniewicz MR, Swarup A. *Metabolic Network Reconstruction and 13C-Metabolic Flux Analysis for Thermus thermophilus HB8.*

134. UDRF SI Poster Session. Newark, DE. November 17, 2010 (Poster Presentation)
Crown SB, Marze NA, **Antoniewicz MR**. *Quantifying Metabolism of Differentiated Adipocytes using 13C-Metabolic Flux Analysis.*

135. AIChE Annual Meeting, Salt Lake City, UT. November 8, 2010 (Oral Presentation)
Antoniewicz MR, Ahn WS. *Elucidation of Perturbed Gluconeogenesis Flux in Fao Rat Hepatoma Cell Line Using Multiple Isotopic Tracers.*

136. AIChE Annual Meeting, Salt Lake City, UT. November 10, 2010 (Oral Presentation)
Antoniewicz MR, Leighty RW. *Dynamic Metabolic Flux Analysis at Metabolic Non-Steady State.*

137. AIChE Annual Meeting, Salt Lake City, UT. November 10, 2010 (Oral Presentation)
Antoniewicz MR, Choi J. *Metabolic Flux Analysis in E. coli Using Tandem Mass Spectrometry.*

138. AIChE Annual Conference. Salt Lake City, UT. November 8, 2010 (Poster Presentation)
Marze NA, Crown SB, **Antoniewicz MR**. *Elucidating the Effect of Passage Number, Culture Flask Type, and Serum Presence on 3T3-L1 Adipocyte Metabolism.*

139. Undergraduate Research Symposium. Newark, DE. Aug 11, 2010 (Poster Presentation)
Lazor V, **Antoniewicz MR**. *Analysis of metabolic fluxes in wild-type and butanol stressed yeast cells.*

140. Undergraduate Research Symposium. Newark, DE. Aug 11, 2010 (Poster Presentation)
Lu J, **Antoniewicz MR**. *Metabolic network reconstruction and flux analysis for the thermophilic bacterium Thermus thermophilus.*

141. Undergraduate Research Symposium. Newark, DE. Aug 11, 2010 (Poster Presentation)
Marze NA, Crown SB, **Antoniewicz MR**. *Elucidating the effect of passage number and culture flask type on 3T3-L1 adipocyte metabolism.*

142. ECI Metabolic Engineering VIII. Jeju Island, Korea. Jun 13, '10 (Poster Presentation)
Crown SB, Marze NA, **Antoniewicz MR**. *Quantifying Metabolism of Differentiated Adipocytes using 13C-Metabolic Flux Analysis.*

143. ECI Metabolic Engineering VIII. Jeju Island, Korea. Jun 13, '10 (Poster Presentation)
Ahn WS, Slusser C, Crown SB, **Antoniewicz MR**. *Metabolic Flux Analysis of Perturbed Gluconeogenesis Flux in Fao Rat Hepatoma Cell Line.*

144. ECI Metabolic Engineering VIII. Jeju Island, Korea. Jun 13, '10 (Poster Presentation)
Choi J, Grossbach MT, **Antoniewicz MR**. *Novel Methodologies for Metabolic Flux Analysis using Tandem Mass Spectrometry.*

145. 3rd Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Baltimore, MD. May 1, 2010 (Poster Presentation)
Crown SB, Marze NA, **Antoniewicz MR**. *Obesity and type II diabetes and systems biology approach using metabolic flux analysis.*

146. 3rd Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Baltimore, MD. May 1, 2010 (Poster Presentation)
Ahn WS, Slusser C, **Antoniewicz MR**. *Type II diabetes and investigation of fluxes of gluconeogenesis (GNG) in liver.*

147. Undergraduate Research Symposium. Newark, DE. April 23, 2010 (Poster Presentation)
Marze NA, Crown SB, **Antoniewicz MR**. *Quantifying the core metabolic fluxes in 3T3-L1 adipocytes using 13C-labeling and mass spectrometric analysis.*

148. Undergraduate Research Symposium. Newark, DE. April 23, 2010 (Poster Presentation)
Grossbach M, Choi J, **Antoniewicz MR**. *The application of tandem mass spectrometry to metabolic flux analysis.*

149. ACS BIOT Meeting, San Francisco, CA. March 21, 2010 (Oral Presentation)

Antoniewicz MR, Choi J. *Tandem mass spectrometry tools for measuring metabolic fluxes.*

150. AIChE Annual Meeting, Nashville, TN. November 11, 2009 (Oral Presentation)
Antoniewicz MR, Leighty RW. *Dynamic Metabolic Flux Analysis with Linear Flux Functionality.*

151. AIChE Annual Meeting, Nashville, TN. November 10, 2009 (Oral Presentation)
Antoniewicz MR, Choi J. *Tandem Mass Spectrometry: A Novel Approach for Metabolic Flux Analysis.*

152. Undergraduate Research Symposium. Newark, DE. August 12, 2009 (Poster Presentation)
DeWoody KC, Swarup A, **Antoniewicz MR**. *Metabolic characterization of thermophilic bacteria in batch culture.*

153. Undergraduate Research Symposium. Newark, DE. August 12, 2009 (Poster Presentation)
Marze NA, Crown SB, **Antoniewicz MR**. *Quantifying the core metabolic fluxes in 3T3-L1 adipocytes using 13C-labeling and mass spectrometric analysis.*

154. Undergraduate Research Symposium. Newark, DE. August 12, 2009 (Poster Presentation)
Grossbach M, Choi J, **Antoniewicz MR**. *The application of tandem mass spectrometry to metabolic flux analysis.*

155. 2nd Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Baltimore, MD. May 2, 2009 (Poster Presentation)
Ahn WS, Slusser C, Crown S, **Antoniewicz MR**. *Estimation of gluconeogenesis flux in Fao rat hepatoma cell line.*

156. 2nd Annual Mid-Atlantic Frontiers at the Chemistry-Biology Interface Symposium. Baltimore, MD. May 2, 2009 (Poster Presentation)
Crown S, Ahn WS, **Antoniewicz MR**. *A study of the gluconeogenesis pathway in FAO hepatoma cells.*

157. ECI Metabolic Engineering VII. Puerto Vallarta, Mexico. Sep 14, '08 (Poster Presentation)
Leighty RW, **Antoniewicz MR**. *Dynamic metabolic flux analysis with linear flux functionality.*

158. ECI Metabolic Engineering VII. Puerto Vallarta, Mexico. Sep 14, '08 (Poster Presentation)
Choi J, **Antoniewicz MR**. *Tandem mass spectrometry method for metabolic flux analysis.*

Presentations from research at Massachusetts Institute of Technology

159. AIChE Annual Meeting. Salt Lake City, UT. November 8, 2007 (Oral Presentation)
Antoniewicz MR. *Estimation of gluconeogenesis using [U-13C,2H8]glycerol tracer in mice*

160. AIChE Annual Meeting. San Francisco, CA. November 16, 2006 (Oral Presentation)
Antoniewicz MR. *Comprehensive analysis of the gluconeogenesis pathway through the combined use of multiple isotopic tracers.*

161. AIChE Annual Meeting. San Francisco, CA. November 15, 2006 (Oral Presentation)

Antoniewicz MR. *Elementary Metabolite Units (EMU): A novel framework for modeling isotopic tracer distributions and determining metabolic fluxes.*

162. 4th International Conference on Pathways, Networks and Systems. Mykonos, Greece. 2006
Antoniewicz MR, Kelleher JK*. *Evaluation of regression models in metabolic physiology: Predicting fluxes from isotopic data without knowledge of the pathway.* (*oral presenter)

163. ECI Metabolic Engineering VI Conference. Netherlands. Oct. 4, 2006 (Oral Presentation)
Antoniewicz MR, Stephanopoulos G. *Elementary metabolite units (EMUs): A novel framework for modeling isotopic tracer distributions and determining metabolic fluxes.*

164. DuPont-MIT Alliance Symposium. Cambridge, MA. Sep. 25, 2006 (Oral Presentation)
Antoniewicz MR. *Analysis of dynamics of PDO biosynthesis in E. coli.*

165. AIChE Annual Meeting. Cincinnati, OH. November 2, 2005 (Oral Presentation)
Antoniewicz MR. *Advances in metabolic flux analysis from stable isotope experiments.*

166. AIChE Annual Meeting. Austin, TX. November 10, 2004 (Oral Presentation)
Antoniewicz MR. *Metabolic flux determination through the combined use of multiple isotopic tracers.*

167. DuPont-MIT Alliance Symposium. Cambridge, MA. October 13, 2004 (Oral Presentation)
Antoniewicz MR. *Comprehensive analysis of bioreaction networks through the use of multiple isotopic tracers.*

168. ECI Metabolic Engineering V Conference. Lake Tahoe, CA. Sep 21, 2004 (Poster)
Antoniewicz MR, Alemán JO, Kelleher JK, Stephanopoulos G. *Combined use of multiple isotopic tracers for the determination of gluconeogenesis.*

169. ECI Metabolic Engineering IV Conference. Il Ciocco, Italy. Oct. 9, 2002 (Poster)
Antoniewicz MR, Kelleher JK, Stephanopoulos G. *MEtabolic TRacer ANalysis (METRAN): software for metabolic flux analysis and isotopomer spectral analysis.*

FUNDING

Funded Projects (Current)

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
Fatty acids in CHO cell culture: from metabolism to productivity improvements
Amount: $200,000 ($100,000 for Antoniewicz Lab)
Project Period: 1/1/2022 - 12/31/2023
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh)
Role: PI

Department of Energy
Developing, understanding, and harnessing modular carbon/nitrogen-fixing tripartite microbial consortia for versatile production of biofuel and platform chemicals
Amount: $1,500,000 ($182,150 for Antoniewicz Lab)

Project Period: 9/1/2021 - 8/31/2024
PI: Nina Lin
Role: Co-PI

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
Controlling citric acid cycle activity and cellular redox state for improved productivity
Amount: $200,000 ($100,000 for Antoniewicz Lab)
Project Period: 1/1/2021 - 12/31/2022
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh)
Role: PI

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
Dipeptides in CHO culture: elucidating uptake kinetics, metabolism and enhanced solubility
Amount: $100,000 ($50,000 for Antoniewicz Lab)
Project Period: 1/1/2020 - 5/31/2022
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh and Marc Donohue, Johns Hopkins)
Role: PI

Department of Energy
Systems analysis of a fast growing N2-fixing cyanobacterium for production of advanced biofuels and nitrogen-containing petrochemical replacement compounds
Amount: $1,500,000 ($225,000 for Antoniewicz Lab)
Project Period: 9/1/2018 - 5/31/2022
PI: Himadri Pakrasi
Role: Co-PI

Department of Energy
Syntrophic Co-Cultures of Clostridium Organisms to Produce Higher Alcohols & Other C6-C8
Amount: $1,500,000 ($312,192 for Antoniewicz Lab)
Project Period: 9/1/2018 - 5/31/2022
PI: Terry Papoutsakis
Role: Co-PI

Funded Projects (Completed)

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
CleanCHO: Targeted elimination of secreted by-products of amino acid catabolism to improve volumetric productivity
Amount: $260,000 ($115,000 for Antoniewicz Lab)
Project Period: 1/1/2019 - 5/31/2021
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh, Johns Hopkins)
Role: PI

National Science Foundation MCB-1616332
Collaborative Research: From genotype to fluxome to a comprehensive kinetic model of Escherichia coli
Amount: $1,170,000 ($620,000 for Antoniewicz Lab)
Project Period: 7/1/2016 - 6/30/2021
PI: Maciek R. Antoniewicz (Co-PIs: Terry Papoutsakis and Costas Maranas, Penn State)
Role: PI

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
Integrated model of CHO cell growth, substrate uptake and intracellular metabolism for process design and control
Amount: $75,000 ($37,500 for Antoniewicz Lab)
Project Period: 1/1/2019 - 5/31/2020
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh, Johns Hopkins)
Role: PI

Department of Energy ARPA-E Plus-Up DE-AR0000432
Synthetic methylotrophy to liquid fuel
Amount: $2,446,232 ($245,318 for Antoniewicz Lab)
Project Period: 2/27/2018 - 12/31/2019
PI: Terry Papoutsakis
Role: Co-PI

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
Elucidating Amino Acid Metabolism in CHO Cells
Amount: $150,000 ($75,000 for Antoniewicz Lab)
Project Period: 1/1/2017 - 5/31/2019
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh, Johns Hopkins)
Role: PI

NSF I/UCRC: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)
Impact of Glucose Flux Control on Product Quality, Growth and Metabolism
Amount: $90,000 ($45,000 for Antoniewicz Lab)
Project Period: 1/1/2018 - 5/31/2019
PI: Maciek R. Antoniewicz (Co-PI: Michael Betenbaugh, Johns Hopkins)
Role: PI

National Science Foundation MCB-1543838
EAGER: Synthetic Control of Metabolism by Dynamic Metabolons
Amount: $299,937 ($108,000 for Antoniewicz Lab)
Project Period: 9/15/2015 - 9/14/2018
PI: Wilfred Chen
Role: Co-PI

National Science Foundation CBET-1511660
SusChEM: Installing the Wood-Ljungdahl pathway in a clostridium platform organism for enhanced metabolite production
Amount: $600,000 ($102,271 for Antoniewicz Lab)
Project Period: 6/15/2015 - 5/31/2018
PI: Terry Papoutsakis
Role: Co-PI

National Science Foundation EFRI-1332344
EFRI-PSBR: Channeling Carbon Flows in Algal Productions Systems from the Molecular to Bioprocessing Scales
Amount: $ 1,999,978 ($396,440 for Antoniewicz Lab)
Project Period: 8/1/2013 - 7/31/2018
PI: Michael Betenbaugh (Johns Hopkins University)

Role: Co-PI

Department of Energy ARPA-E DE-AR0000432
Synthetic methylotrophy to liquid fuel
Amount: $4,500,000 ($400,000 for Antoniewicz Lab)
Project Period: 1/1/2014 - 1/31/2017
PI: Terry Papoutsakis and Wilfred Chen
Role: Co-PI

National Science Foundation CBET-1054120
"CAREER: A novel approach for deciphering cellular metabolic phenotypes using tandem mass spectrometry
Amount: $400,000
Project Period: 2/1/2011 - 1/31/2017
PI: Maciek R. Antoniewicz
Role: PI

National Science Foundation MCB-1120684
Quantitative Analysis of Metabolic Networks and Flux Dynamics in Thermophilic Bacteria
Amount: $401,142
Project Period: 8/1/2011 - 7/31/2016
PI: Maciek R. Antoniewicz
Role: PI

National Science Foundation IIP-1346424
STTR Phase I: Integration of carbohydrate and gaseous fermentations for maximum C4 chemical yield
Amount: $225,000 ($18,212 for Antoniewicz Lab)
Project Period: 1/1/2014 - 12/31/2014
PI: Bryan Tracy (Elcriton company)
Role: PI on University of Delaware project

Department of Energy 0017559/ER65257 (DE-SC0007092)
Experimental Systems-Biology Approaches for Clostridia-Based Bioenergy Production
Amount: $2,247,595 ($249,500 for Antoniewicz Lab)
Project Period: 9/1/2011 - 8/31/2014
PI: E. Terry Papoutsakis and Cathy H. Wu
Role: Co-I

National Institutes of Health COBRE
COBRE Pilot Project: Elucidating the role of mitochondrial transport proteins in hepatocytes
Amount: $146,000
Project Period: 10/1/2009 - 12/31/2011
PI: Abraham M. Lenhoff
Role: PI on Pilot Project

University of Delaware Research Foundation (UDRF) Strategic Initiatives Award
A Systems Biology Approach for Characterizing Adipogenesis and Fat Metabolism
Amount: $45,000
Project Period: 12/1/2009 - 9/30/2011
PI: Maciek R. Antoniewicz (Co-PI: E. Terry Papoutsakis)

Role: PI

DuPont Young Professor Award
Novel tools for elucidating complex phenotypes and engineering microbial cells for biofuel production
Amount: $75,000
Project Period: 7/1/2008 - 7/1/2011
PI: Maciek R. Antoniewicz
Role: PI

Athena Biotechnologies, Inc.
Metabolic engineering of a hyperthermophilic ethanologen
Amount: $48,000
Project Period: 5/1/2009 - 4/30/2010
PI: Maciek R. Antoniewicz
Role: PI

UDRF Research Experience for Undergraduates
Application of tandem mass spectrometry in flux studies
Amount: $1,500
Project Period: 6/1/2009 - 2/28/2010
PI: Maciek R. Antoniewicz
Role: PI

University of Delaware Research Foundation (UDRF) Award
Application of tandem mass spectrometry for quantifying labeling distributions and estimating metabolic fluxes
Amount: $25,000
Project Period: 6/1/2008 - 5/31/2009
PI: Maciek R. Antoniewicz
Role: PI

TEACHING EXPERIENCE

Courses Taught at the University of Michigan

ChE 528 Chemical Reaction Engineering **Winter 2022**
Core course, Graduate Level
39 students

ChE 496/696 Metabolic and Microbiome Engineering **Fall 2021**
Elective, Junior/Senior/Grad Level
3 students

ChE 528 Chemical Reaction Engineering **Winter 2021**
Core course, Graduate Level
44 students

ChE 496/696 Metabolic Engineering and Systems Biology **Fall 2020**

Elective, Junior/Senior/Grad Level
9 students

ChE 528 Chemical Reaction Engineering **Winter 2020**
Core course, Graduate Level
33 students

Courses Taught at the University of Delaware

CHEG 420 Biochemical Engineering **Spring 2019**
Elective, Junior/Senior/Grad Level (required class for Biochemical Eng. Minor)
17 students

CHEG 621 Metabolic Engineering **Fall 2018**
Elective, Junior/Senior/Grad Level
7 students

CHEG 420 Biochemical Engineering **Spring 2018**
Elective, Junior/Senior/Grad Level (required class for Biochemical Eng. Minor)
21 students

CHEG 621 Metabolic Engineering **Fall 2017**
Elective, Junior/Senior/Grad Level
6 students

CHEG 420 Biochemical Engineering **Spring 2017**
Elective, Junior/Senior/Grad Level (required class for Biochemical Eng. Minor)
30 students

CHEG 621 Metabolic Engineering **Fall 2016**
Elective, Junior/Senior/Grad Level
20 students

CHEG 420 Biochemical Engineering **Spring 2016**
Elective, Junior/Senior/Grad Level (required class for Biochemical Eng. Minor)
20 students

CHEG 332 Kinetics **Fall 2015**
Core course, Junior Level (co-taught with B. Xu)
87 students

CHEG 420 Biochemical Engineering **Spring 2015**
Elective, Junior/Senior/Grad Level (required class for Biochemical Eng. Minor)
44 students

CHEG 332 Kinetics **Fall 2014**
Core course, Junior Level (co-taught with B. Xu)
97 students

CHEG 342 Heat and Mass Transfer **Spring 2013**

Core course, Junior Level (co-taught with A. Kloxin)
82 students

CHEG 342 Heat and Mass Transfer **Spring 2012**
Core course, Junior Level
59 students

CHEG 445 Senior Lab - Fermentation **Fall 2011**
Core course, Senior Level (co-taught with W. Chen)
66 students

CHEG 621 Metabolic Engineering **Fall 2011**
Elective, Junior/Senior/Grad Level (co-taught with E.T. Papoutsakis)
15 students

CHEG 342 Heat and Mass Transfer **Spring 2011**
Core course, Junior Level (co-taught with A. Robinson)
76 students

CHEG 445 Senior Lab - Fermentation **Fall 2010**
Core course, Senior Level
35 students

CHEG 621 Metabolic Engineering **Spring 2010**
Elective, Junior/Senior/Grad Level (co-taught with E.T. Papoutsakis)
13 students

CHEG 620 Biochemical Engineering **Spring 2010**
Elective, Junior/Senior/Grad (co-taught with S. Bhatia) (required for Biochem. Eng. Minor)
22 students

CHEG 445 Senior Lab - Fermentation **Fall 2009**
Elective, Senior Level
8 students

CHEG 621 Metabolic Engineering **Spring 2009**
Elective, Junior/Senior/Grad Level (co-taught with E.T. Papoutsakis)
10 students

CHEG 445 Senior Lab - Fermentation **Fall 2008**
Elective, Senior Level (newly developed course module)
12 students

CHEG 621 Metabolic Engineering **Spring 2008**
Elective, Junior/Senior/Grad Level (co-taught with E.T. Papoutsakis)
19 students

CHEG 620 Biochemical Engineering **Fall 2007**
Elective, Junior/Senior/Grad (co-taught with M. Sullivan) (required for Biochem. Eng. Minor)
35 students

Short Courses and Workshops Taught

Advanced Course on Metabolomics for Microbial Systems Biology **2013**
Invited Lecture, November 1, 2013
Course Location: TU Delft, Netherlands
Course Organizer: Joseph J. Heijnen

Advanced Course on Metabolomics for Microbial Systems Biology **2012**
Invited Lecture, November 2, 2012
Course Location: TU Delft, Netherlands
Course Organizer: Joseph J. Heijnen

Advanced Course on Metabolomics for Microbial Systems Biology **2011**
Invited Lecture, October 28, 2011
Course Location: TU Delft, Netherlands
Course Organizer: Joseph J. Heijnen

Short Course on Molecular Biology and Metabolism **2009**
Organizer and Lecturer. June 18-19, 2009
Course Location: Merck & Co Inc.
Course Organizer: Maciek R. Antoniewicz

Short Course on Bioinformatics: Principles, Methods and Applications **2005**
Invited Lectures, June 6-9, 2005
Course Location: Massachusetts Institute of Technology (MIT)
Course Organizer: Gregory Stephanopoulos

Short Course on Bioinformatics **2004**
Invited Lectures, June 22-26, 2004
Course Location: Massachusetts Institute of Technology (MIT)
Course Organizer: Gregory Stephanopoulos

Short Course on Metabolic Engineering **2001**
Co-organizer and Lecturer, June 18-20, 2001
Course Location: DuPont Co.
Course Organizer: Gregory Stephanopoulos

RESEARCHERS SUPERVISED

Graduate Students

1. Yu-Jun (June) Hong, Ph.D. candidate 2019-present
   Syntrophic metabolite cross-feeding in co-cultures
2. Xiangchen (Harry) Cai, Ph.D. candidate 2019-present
   Elucidating and manipulating metabolism of CHO cells
3. Michael Dahle, Ph.D. candidate 2017-present
   Elucidating interactions in microbial communities through ^{13}C-flux analysis
4. Gerald Har, Ph.D. candidate 2017-present

Application of adaptive laboratory evolution and ^{13}C-flux analysis for improving understanding of metabolism and generating novel phenotypes

5. Eleanor H. Oates, Ph.D. candidate 2015-20
Investigating metabolic reprogramming in adipocytes via ^{13}C-based techniques

6. Camil A.C. Diaz, Ph.D. degree 2014-19
Engineering nitrogen self-sufficient cocultures of ammonium-secreting Azotobacter vinelandii and glucose secreting Escherichia coli

7. Brian O. McConnell, Ph.D. degree 2014-19
Employing 13C tracers to elucidate bacterial and microalgal metabolism in dynamic systems

8. Jacqueline E. Gonzalez, Ph.D. degree 2013-18
Tracing metabolism from sugars and one-carbon substrates using stable-isotopes

9. Christopher P. Long, Ph.D. degree 2012-17
Interrogating bacterial metabolism via the mapping of fluxomic responses to gene knockouts and adaptive evolution

10. Nikodimos A. Gebreselassie, Ph.D. degree 2012-17
Co-culture ^{13}C metabolic flux analysis: A novel approach to elucidate the metabolism of multi-organism systems

11. Jennifer Au, Ph.D. degree 2011-16
Novel Strategies for validating metabolic network models using stable isotope tracers

12. Scott B. Crown, Ph.D. degree 2008-13
Novel methodologies for isotopic tracer and experiment design: applications to ^{13}C-metabolic flux analysis and isotopic studies

13. Woo Suk Ahn, Ph.D. degree 2008-12
Metabolic flux analysis of mammalian cell metabolism using multiple isotopic tracers and mass spectrometry

14. Aditi Swarup, M.S. degree 2008-10
Reconstruction and analysis of central metabolism for the thermophilic bacterium Thermus thermophilus

15. Robert W. Leighty, Ph.D. degree 2007-13
Dynamic metabolic flux analysis and parallel labeling experiments

16. Jungik Choi, Ph.D. degree 2007-12
Tandem mass spectrometry: a novel approach for metabolic flux analysis

Undergraduate Theses

1. Eric Wolfsberg, B.S. honors thesis (Honors program at UD) 2018-20
Elucidating metabolism of E. coli double-knockouts

2. Ryan McNulty, B.S. honors thesis (Honors program at UD) 2017-18
Elucidating synergistic interactions in microbial communities consisting of complementary E. coli auxotrophs

3. Brian Phillips, B.S. honors thesis (Honors program at UD) 2016-17
   Characterization of amino acid metabolism in Escherichia coli

4. Lauren Cordova, B.S. honors thesis (Honors program at UD) 2014-15
   Optimal growth and scale-up conditions for an extremely thermophilic microorganism

5. Jing Lu, B.S. honors thesis (Honors program at UD) 2011-12
   Thermus thermophilus as a model organism for biofuels production

6. Nick Marze, B.S. honors thesis (Honors program at UD) 2010-11
   Quantifying the relative contributions of two pathways to odd-chain-length fatty acid synthesis in 3T3-L1 adipocytes

Undergraduate Students
(Undergrad research: S = spring; F = fall; W = winter; M = summer; underlined = honors thesis)

1.	Eric Wolfsberg	W18, M18, W19, M19, F19, W20, S20	2018-20
2.	Ryan McNulty	W16, M16, F17, W18, S18	2016-18
3.	Brian Phillips	M16, F16, W17, S17	2016-17
4.	Robert Cipolla	W15, M15, W16, M16, W17, M17, W18, F18, W19, S19	2015-19
5.	Ashwin Monian	S14, M14, F14, W15, S15, W16	2014-16
6.	Yuncheng (Max) Yu	W14	2014
7.	Lauren Cordova	M12, F12, S13, M13, F13, W14, F14, W15, S15, M15	2012-15
8.	Jing Lu	W10, M10, S11, M11, F11, W12, S12	2010-12
9.	Vince Lazor	M10, F10, S11	2010-11
10.	Ben Boch	F10	2010
11.	Christine Smith	S10	2010
12.	Nick Marze	M09, F09, W10, M10, F10, W11, S11	2009-11
13.	Matt Grossbach	M09, W10, M10	2009-10
14.	Carolyn Slusser	W09, F09, W10, S10	2009-10
15.	Doug Behrens	F09	2009
16.	Andy Damiani	F09	2009
17.	Kathleen DeWoody	M09, F09	2009
18.	Karen McBride	W09	2009
19.	Michelle Betty	F08, S09	2008-09
20.	Josh Bender	F08, S09	2008-09
21.	Kevin Campbell	F08, S09	2008-09

Visiting Professors

1.	Prof. Peter Verheijnen	Delft University of Technology	2015
2.	Prof. Sarah Harcum	Clemson University	2012
3.	Prof. Lifeng Peng	University of Wellington, New Zealand	2012

Visiting Researchers

1.	Bart Ghesquière	KU Leuven, Belgium	Visiting postdoc, 2013

Other Students

1.	Yu-Jen (Andrew) Lee	University of Michigan	2019-2021
2.	Michael Dahle	University of Delaware	CBI Student Rotation, 2018
3.	Nathaniel Hamaker	University of Delaware	CBI Student Rotation, 2017
4.	Chris Long	University of Delaware	CBI Student Rotation, 2013

5.	Niko Gebreselassie	University of Delaware	CBI Student Rotation, 2013
6.	Scott Crown	University of Delaware	CBI Student Rotation, 2009
7.	Daniel Hess	University of Delaware	CBI Student Rotation, 2008

Thesis Committees of Graduate Students

1.	Kamil Charubin	Ph.D. candidate	Papoutsakis group	2016-present
2.	Julia Petrullo-Rohlhill	Ph.D.	Papoutsakis group	2015-20
3.	Lauren F. Dorsey	M.S.	Chen group	2015-16
4.	Kyle Bennett	Ph.D.	Papoutsakis group	2014-18
5.	Ellinor Schmidt	Ph.D.	Papoutsakis group	2013-17
6.	Stefanie Berges	Ph.D.	Colby group	2013-17
7.	Ka-Hei Siu	Ph.D.	Chen group	2013-18
8.	Rebecca Chen	Ph.D.	Chen group	2013-18
9.	Daniel Cook	Ph.D.	Ogunnaike group	2012-17
10.	Nick Siano	M.S.	Golovan group	2012-14
11.	Abhinav Jain	M.S.	Colby group	2011-13
12.	Alan Fast	Ph.D.	Papoutsakis group	2011-17
13.	Ben Kremkow	Ph.D.	Lee group	2011-16
14.	Kristin Valente	Ph.D.	Lee group	2011-14
15.	Devesh Radhakrishnan	Ph.D.	Ogunnaike group	2011-16
16.	Daniel Hess	M.S.	Hanson group	2010-12
17.	Kyle Zingaro	Ph.D.	Papoutsakis group	2010-13
18.	Melissa St. Amand	Ph.D.	Ogunnaike group	2009-13
19.	Anup Agarwal	M.S.	Lee group	2009-11
20.	Stefan Gaida	Ph.D.	Papoutsakis group	2009-13
21.	Marc Birtwistle	Ph.D.	Ogunnaike group	2007-08

PROFESSIONAL SERVICE

Membership in Professional Societies

American Institute of Chemical Engineers (AIChE)	2004-present
American Chemical Society (ACS)	2007-present
ACS Division of Biochemical Technology (ACS BIOT)	2007-present
ACS Division of Biological Chemistry (ACS BIOL)	2007-present
Society for Biological Engineers (SBE)	2008-present
International Metabolic Engineering Society (IMES)	2012-present
American Association for the Advancement of Science (AAAS)	2016-present
American Society for Microbiology (ASM)	2016-present
Society for Industrial Microbiology and Biotechnology (SIMB)	2017-present
American Institute for Medical and Biological Engineering (AIMBE)	2018-present

Editorial Boards

Current Research in Biotechnology, Editorial Board Member	2021-present
Metabolic Engineering Communications, Associate Editor	2014-present
Metabolic Engineering, Editorial Board Member	2013-present
Current Opinion in Biotechnology, Editorial Board Member	2010-present
Biotechnology Journal, Editorial Board Member	2011-present
Journal of Biomedicine and Biotechnology, Guest Editor, Special Edition	2010

National Workshops

DOE-BER Biosystems Design Workshop, Invited Participant	July, 2011
Emerging Leaders Alliance Training Program, Invited Participant	Sep, 2008

Grant Review Panels

Department of Energy, DOE BER	Aug, 2020
National Science Foundation, NSF BIO MCB	Sept, 2016
National Science Foundation, NSF ENG CBET	Jan, 2016
Department of Energy, DOE BER	Feb, 2015
National Science Foundation, NSF ENG CBET	May, 2014
National Science Foundation, NSF BIO MCB	Nov, 2011
National Science Foundation, NSF ENG CBET	Oct, 2011
National Science Foundation, NSF ENG CBET	May, 2011

Conference Organization (International Meetings)

International Metabolic Engineering Conference XI, Japan Poster Session Chair	2016
International Metabolic Engineering Conference X, Canada Session Chair, *The changing landscape in technology for metabolic engineering*	2014
3rd Biotechnology World Congress, Dubai, UAE International Advisory Board Member	2014
ECI Biochemical and Molecular Engineering Conference XVII, Beijing, China Session Chair, *High throughput technologies and systems biology tools*	2013
2nd Biotechnology World Congress, Dubai, UAE International Advisory Board Member	2013
ECI Metabolic Engineering Conference IX, France Scientific Advisory Board Member	2012
1st Biotechnology World Congress, Dubai, UAE International Advisory Board Member	2012
ECI Metabolic Engineering Conference VIII, Korea Poster Session Chair	2010
3rd Conference on Foundations of Systems Biology in Engineering (FOSBE) Program Committee	2009
ECI Metabolic Engineering Conference VII, Mexico Poster Session Chair	2008

Conference Organization (National Meetings)

ACS BIOT Annual Meeting 2018 Conference Chair (Co-Chair: Nihal Tugcu, Merck Inc.)	2018
ACS BIOT Annual Meeting 2017 Program Area Coordinator for Bio-based Products	2017
ACS BIOT Annual Meeting 2016 Program Area Coordinator for Upstream Processes	2016
ACS BIOT Annual Meeting 2015 Session Chair, *Advances in Systems Biology*	2015
AIChE Annual Meeting 2014 Session Chair, *Cell Culture III: Metabolic Flux Analysis and Modeling*	2014
AIChE Annual Meeting 2013 Session Chair, *Cell Culture III: Metabolic Flux Analysis and Modeling*	2013
AIChE Annual Meeting 2012 Session Chair, *Mathematical Approaches for Systems Biology*	2012

AIChE Annual Meeting 2011 2011
Session Chair, *Advances in Cell Culture II: Metabolic Flux Analysis and Modeling of CHO Cells*
AIChE Annual Meeting 2011 2011
Session Chair, *Advances in Cell Culture III: Metabolic Flux Analysis and Modeling*
AIChE Annual Meeting 2011 2011
Session Chair, *Proteomics & Metabolomic Approaches to Systems Biology*
ACS BIOT Annual Meeting 2011 2011
Session Chair, *Advances in Systems Biology*
AIChE Annual Meeting 2010 2010
Session Chair, *Proteomics & Metabolomic Approaches to Systems Biology*
ACS BIOT Annual Meeting 2010 2010
Session Chair, *Advances in Metabolic Engineering*
AIChE Annual Meeting 2009 2009
Session Chair, *Mathematical Approaches in Systems Biology: Genome Scale Models*
AIChE Annual Meeting 2009 2009
Session Chair, *Mathematical Approaches in Systems Biology: Probabilistic Processes*
AIChE Annual Meeting 2009 2009
Session Chair, *Mathematical Approaches in Systems Biology: Kinetics and Dynamic Processes*
3rd Conference on Foundations of Systems Biology in Engineering FOSBE 2009
Session Chair, *Alternative Fuels*

SERVICE AT THE UNIVERSITY OF MICHIGAN

Department Level

Graduate Admissions Chair 2021-present
Casebook Committee Member (for Promotion & Tenure) 2021
Graduate Committee Member 2019-present
Undergraduate Student Advisor 2020-present
Graduate Admissions Committee Member 2019-2020

Collage Level

Launch Committee Member for Jouha Min 2021-present

SERVICE AT THE UNIVERSITY OF DELAWARE

Department Level

Graduate Program Committee 2018-19
Faculty Search Committee 2017-18
Director of Graduate Admissions 2016-19
Faculty Search Committee 2015-16
Director of Biochemical Engineering Minor 2014-19
Graduate Admissions Committee 2014-16
Faculty Search Committee 2009-10

Department Seminar Series Coordinator	2009-10
AIChE Student Chapter Advisor	2008-11
Undergraduate Student Advisor	2008-19
Undergraduate Curriculum Committee	2007-13