Todd T. Eckdahl

Curriculum Vita

Objectives

To continue to pursue excellence in teaching undergraduate courses in Biology; to engage undergraduate students in meaningful research experiences; to make contributions to the educational community at Missouri Western State University and beyond.

Teaching Responsibilities

Undergraduate lecture and laboratory courses in General Biology for nonmajors, Genetics, Molecular Biology, and Bioinformatics; mentoring of undergraduate research students.

Research Interests

Synthetic Biology, or the use of engineering principles and molecular biology tools to design and construct genetic circuits in living cells that enable them to function as biological devices with broad applications. Specific interest in the construction of bacterial computers that can solve mathematical and biological problems.

Education

University of Minnesota, Duluth	Major Chemistry, Minor Biology	B.S. 1981
Purdue University	Molecular Genetics	Ph.D. 1989
University of Wisconsin, Madison	Virology	Post-Doc 1989-1992

Academic Positions

Missouri Western State University	Professor of Biology	2001-present
Missouri Western State College	Associate Professor of Biology	1997-2001
Missouri Western State College	Assistant Professor of Biology	1993-1997

Awards

2011	Missouri Western Board of Governors Distinguished Professor Award
2008	James V. Mehl Outstanding Faculty Scholarship Award
2006	Missouri Western Board of Governors Distinguished Professor Award
2006	Beta Beta Beta National Biology Honor Society Yokely Faculty Service Award
2003	Missouri Western Alumni Association Distinguished Faculty Award
2002	James V. Mehl Outstanding Faculty Scholarship Award
1999	Missouri Governor's Award for Excellence in Teaching
1999	Liberal Arts and Sciences Council of Chairpersons Award
1998	Jesse Lee Meyers Excellence in Teaching Award

Professional Memberships

Missouri Academy of Science, Council on Undergraduate Research, Genome Consortium for Active Teaching, Genome Education Partnership.

Peer-Reviewed Publications (54 publications; 267 undergraduate coauthors, denoted by *)

1. Jacob Oyler*, Emily Niec*, Jesica Phelan*, Ali Tauchen*, Raechel Tittor*, Todd T. Eckdahl. **2021**. Development of Ribozyme-Based Selection Strategy for Metabolic Engineering. November, 2021, *Journal of Young Investigators*.

2. Lewis, Mark, Verma, Amit, and Eckdahl, Todd T. **2021**. Qfold: A new modeling paradigm for the RNA folding problem. *Journal of Heuristics* 27(1): 1-23.

3. Owen Koucky*, Jacob Wagner*, Sofia Aguilera*, Benjamin Bashaw*, Queena Chen*, Anthony Eckdahl*, Elise Edman*, Paul Gomez*, Nick Hanlan*, Nick Kempf*, Devin Mattoon*, Sam McKlin*, Christopher Mazariegos*, Alex Morehead*, Shi Qing Ong*, Andy Peterson*, Maria Rojas*, Kyla Roland*, Kaitlyn Schildknecht*, Haley Seligmann*, Kaden Slater*, Ali Tauchen*, Raechel Tittor*, Tatianna Travieso*, Dannie Urban*, Caroline Willis*, John Zhou*, Nicole L. Snyder, Laurie J. Heyer, Jeffrey L. Poet, Todd DOI 10.33697 T. Eckdahl, A. Malcolm Campbell. **2020**. Synthetic Biology Bicistronic Designs Support Gene Expression Equally Well *in vitro* and *in vivo*. *American Journal of Undergraduate Research* 17, no. 1. *https://doi.org/10.33697/ajur.2020.012*

4. Shaver, Z.M. *, Bent, S.S.*, Bilby, S.R.*, Brown, M.*, Buser, A.*, Cuellar, I.G.*, Davis, A.J.*, Doolan, L.*, Enriquez, F.C.*, Estrada, A.*, Herner, S.*, Herron, J.C.*, Hunn, A.M.*, Hunter, M.*, Johnston, H.*, Koucky, O.*, Mackley, C.C.*, Maghini, D.*, Mattoon, D.*, McDonald, H.T.*, Sinks, H.*, Sprague, A.J.*, Sullivan, D.*, Tutar, A.*, Umphreys, A.*, Watson, C.*, Zweerink, D.*, Heyer, L.J., Poet, J.L., Eckdahl, T.T., Campbell, A.M. **2018**. Attempted use of PACE for riboswitch discovery generates three new translational theophylline riboswitch side products. *BioMed Central Research Notes* 11, no. 861.

5. Campbell, A. Malcolm and Eckdahl, Todd T. **2018**. rClone Red Facilitates Bacterial Gene Expression research by Undergraduates in the Teaching Laboratory." *Synthetic Biology* 3, no. 1.

6. Kendig, Catherine and Eckdahl, Todd T. **2017**. "Reengineering Metaphysics: Modularity, Parthood, and Evolvability in Metabolic Engineering" *Philosophy, Theory, and Practice in Biology* 9, no. 8, Special Issue.

7. Anthony J. Eckdahl*, Rachel Neal*, A. Malcolm Campbell, and Todd T. Eckdahl. **2017**. "rClone: A Synthetic Biology Tool that Enables the Research of Bacterial Translation," *Journal of Young Investigators* 32, no. 3, pp 12-19.

8. Elgin, Sarah, Charles Hauser, Teresa M. Holzen, Christopher J. Jones, Adam Kleinschmit, Judith Leatherman, Genomics Education Partnership (including Todd T. Eckdahl). **2017**. The GEP: Crowd-Sourcing Big Data Analysis with Undergraduates. *Trends in Genetics* 33, no. 2, pp 81-85.

9. Anthony J. Eckdahl* and Todd T. Eckdahl. **2016**. "Mutational Analysis of Transcriptional Initiation in Bacteria," *Journal of Young Investigators* 31 (3), pp 285-296. Chosen as top biology paper in Best of JYI 2016.

10. Jessica K. Bell, Todd T. Eckdahl, David A. Hecht, Patrick J. Killion, Joachim Latzer, Tamara L. Mans, Joseph J. Provost, John F. Rakus, Erica A. Siebrasse, J. Ellis Bell. **2016**. "CUREs in Biochemistry – Where we are and where we should go." *Bioch Mol Biol Education* doi: 10.1002/bmb.20989.

11. Chester J*, Edlin L*, Galeotoa-Sprung J*, Isom B*, Moore A*, Perkins V*, Campbell AM, Eckdahl TT, Heyer LJ, Poet JL. **2016**. "On Counting Limited Outdegree Grid Digraphs and Greatest Increase Grid Digraphs." *Involve* 9 (2), pp 211-221.

12. Todd T. Eckdahl and A. Malcolm Campbell, "Using Synthetic Biology and pClone Red for Authentic Research on Promoter Function: Genetics (analyzing mutant promoters)," *CourseSource*, September **2015**.

13. A. Malcolm Campbell and Todd T. Eckdahl, "Using Synthetic Biology and pClone Red for Authentic Research on Promoter Function: Introductory Biology (identifying new promoters)," *CourseSource*, September **2015**.

14. Todd T. Eckdahl, A. Malcolm Campbell, Laurie J. Heyer, Jeffrey L. Poet, David N. Blauche, Nicole L. Snyder, Dustin T. Atchley*****, Erich J. Baker*****, Micah Brown*****, Elizabeth C. Brunner*****, Sean A. Callen*****, Jesse S. Campbell*****, Caleb J. Carr*****, David R. Carr*****, Spencer A. Chadinha*****, Grace I. Chester*, Josh Chester*, Ben R. Clarkson*, Kelly E. Cochran*, Shannon E. Doherty*, Catherine Doyle*****, Sarah Dwyer*****, Linnea M. Edlin*****, Rebecca A. Evans*****, Taylor Fluharty*****, Janna Frederick*****, Jonah Galeota-Sprung*****, Betsy L. Gammon*****, Brandon Grieshaber*****, Jessica Gronniger*****, Katelyn Gutteridge*****, Joel Henningsen*****, Bradley Isom*****, Hannah L. Itell*****, Erica C. Keffeler*****, Andrew J. Lantz*****, Jonathan N. Lim*****, Erin P. McGuire*****, Alexander K. Moore*****, Jerrad Morton*****, Meredith Nakano*****, Sara A. Pearson*****, Virginia Perkins*****, Phoebe Parrish*****, Claire E. Pierson*****, Sachith Polpityaarachchige*****, Michael J. Quaney*****, Abagael Slattery*****, Kathryn E. Smith*****, Jackson Spell*****, Morgan Spencer*****, Telavive Taye*****, Kamay Trueblood*****, Caroline J. Vrana*****, E.Tucker Whitesides*****. **2015**. Programmed evolution for optimization of orthogonal metabolic output in bacteria. *PLOS ONE* 10(2): e0118322. doi:10.1371/journal.pone.0118322

15. Leung W, Genomics Education Partnership Faculty and Students including 42 Missouri Western Students*, Eckdahl TT, Poet JL, Elgin SCR. **2015**. *Drosophila* Muller F elements maintain a distinct set of genomic properties over 40 million years of evolution. *Genes, Genomes, and Genetics* 2015 Mar 4. pii: g3.114.015966.

16. David Lopatto, Charles Hauser, Christopher J. Jones, Don Paetkau, Vidya Chandrasekaran, David Dunbar, Christy MacKinnon, Joyce Stamm, Consuelo Alvarez, Daron Barnard, James E. J. Bedard, April E. Bednarski, Satish Bhalla, John M Braverman, Martin Burg, Hui-Min Chung, Randall J. DeJong, Justin R. DiAngelo, Chunguang Du, Todd T. Eckdahl, Julia Emerson, Amy Frary, Donald Frohlich, Anya L. Goodman, Yuying Gosser, Shubha Govind, Adam Haberman, Amy T. Hark, Arlene Hoogewerf, Diana Johnson, Lisa Kadlec, Marian Kaehler, S. Catherine Silver Key, Nighat Kokan, Olga R. Kopp, Gary A. Kuleck, Jane Lopilato, Juan C. Martinez-Cruzado, Gerard McNeil, Stephanie Mel, Alexis Nagengast, Paul J. Overvoorde, Susan Parrish, Mary Preuss, Laura D. Reed, E. Gloria Regisford, Dennis Revie, Srebrenka Robic, Jennifer A. Roecklien-Canfield, Anne G. Rosenwald, Michael R. Rubin, Kenneth Saville, Stephanie Schroeder, Karim Sharif, Mary Shaw, Gary Skuse, Christopher D Smith, Mary Smith, Sheryl T. Smith, Eric P. Spana, Mary Spratt, Aparna Sreenivasan, Jeffrey S. Thompson, Matthew Wawersik, Michael Wolyniak, James Youngblom, Leming Zhou, Jeremy Buhler, Elaine Mardis, Wilson Leung, Christopher D. Shaffer, Jennifer Threlfall, Sarah C. R. Elgin. **2014**. A Central Support System Can Facilitate Implementation and Sustainability of a Classroom-Based Undergraduate Research Experience (CURE) in Genomics. *CBE Life Science Education* 13(4): 711-723.

17. A. Malcolm Campbell, Todd Eckdahl, Brian Cronk, Corinne Andresen*, Paul Frederick*, Samantha Huckuntod*, Claire Shinneman*, Annie Wacker*, Jason Yuan*. **2014**. "pClone: Synthetic Biology Tool Makes Promoter Research Accessible to Beginning Biology Students," *CBE Life Science Education* 13: 285-296.

18. Shaffer CD, Alvarez CJ, Bednarski AE, Dunbar D, Goodman AL, Reinke C, Rosenwald AG, Wolyniak MJ, Bailey C, Barnard D, Bazinet C, Beach DL, Bedard JE, Bhalla S, Braverman J, Burg M, Chandrasekaran V, Chung HM, Clase K, Dejong RJ, Diangelo JR, Du C, Eckdahl TT, Eisler H, Emerson JA, Frary A, Frohlich D, Gosser Y, Govind S, Haberman A, Hark AT, Hauser C, Hoogewerf A, Hoopes LL, Howell CE, Johnson D, Jones CJ, Kadlec L, Kaehler M, Silver Key SC, Kleinschmit A, Kokan NP, Kopp O, Kuleck G, Leatherman J, Lopilato J, Mackinnon C, Martinez-Cruzado JC, McNeil G, Mel S, Mistry H, Nagengast A, Overvoorde P, Paetkau DW, Parrish S, Peterson CN, Preuss M, Reed LK, Revie D, Robic S, Roecklein-Canfield J, Rubin MR, Saville K, Schroeder S, Sharif K, Shaw M, Skuse G, Smith CD, Smith MA, Smith ST, Spana E, Spratt M, Sreenivasan A, Stamm J, Szauter P, Thompson JS, Wawersik M, Youngblom J, Zhou L, Mardis ER, Buhler J, Leung W, Lopatto D, Elgin SCR. **2014**. A Course-Based Research Experience: How Benefits Change with Increased Investment in Instructional Time. *CBE Life Science Education* 13(1): 111-130.

19. Eric M. Sawyer*, Cody Barta*, Romina Clemente*, Michel Conn*, Clif Davis*, Catherine Doyle*, Mary Gearing*, Olivia Ho-Shing*, Alyndria Mooney*, Jerrad Morton*, Shamita Punjabi*, Ashley Schnoor*, Siya Sun*, Shashank Suresh*, Bryce Szczepanik*, D. Leland Taylor*, Annie Temmink*, William Vernon*, A. Malcolm Campbell , Laurie J. Heyer, Jeffrey L. Poet, and Todd T. Eckdahl. **2012**. Bacterial Logic Devices Reveal Unexpected Behavior of Frameshift Suppressor tRNAs. *Interdisciplinary Bio Central.* Vol. 4(10): 1 - 12.

20. A. Malcolm Campbell, Meredith J. Nakano*, Caroline J. Vrana*, Laurie J. Heyer, Todd T. Eckdahl, and Jeffrey L. Poet. **2012**. Providing Structure for Research Students Coming and Going. *CBE- Life Sciences Education* 11(4): 337 - 338.

21. A. Malcolm Campbell, Laurie J. Heyer, Todd T. Eckdahl, Jeffrey L. Poet. **2012**. Integrating Synthetic Biology into the Microbiology Curriculum: Teaching labs and research projects that feature synthetic biology steer clear of rote learning and help to motivate students. *Microbe* 7(10): 460-465.

22. Ho-Shing, Olivia*, Kin H. Lau*, William Vernon*, Todd T. Eckdahl, and A. Malcolm Campbell. **2012**. *Assembly of Standardized DNA Parts Using BioBrick Ends in* E. coli. Chapter published in "Gene Synthesis: Methods and Protocols". *Methods in Molecular Biology*, volume 852. Jean Peccoud editor. Humana Press. New York, NY. Pages 61 – 76.

23. Brianna Pearson*, Kin H. Lau*, Alicia Allen*, James Barron*, Robert Cool*, Kelly Davis*, Will DeLoache*, Erin Feeney*, Andrew Gordon*, John Igo*, Aaron Lewis*, Kristi Muscalino*, Madeline Parra*, Pallavi Penumetcha*, Victoria G. Rinker*, Karlesha Roland*, Xiao Zhu*, Jeffrey L. Poet, Todd T. Eckdahl, Laurie J. Heyer and A Malcolm Campbell. **2011**. Bacterial Hash Function Using DNA-Based XOR Logic Reveals Unexpected Behavior of the LuxR Promoter. *Interdisciplinary Bio Central*. Vol. 3, article no. 10, doi: 10.4051/ibc.2011.3.3.0010.

24. Penumetcha, Pallavi*****, Kin Lau*****, Xiao Zhu*****, Kelly Davis*****, Todd T. Eckdahl and A. Malcolm Campbell. **2010**. Improving the Lac system for synthetic biology. *BIOS* Vol. 81(1): 7 - 15.

25. Eckdahl, Todd T., A. Malcolm Campbell, Laurie J. Heyer, and Jeffrey L. Poet. **2010**. Synthetic biology and the international genetically engineered machines competition. *BIOS* 81(1): 1-6.

26. Poet, Jeffrey L., A. Malcolm Campbell, Tod T. Eckdahl, Laurie J. Heyer. Bacterial Computing. **2010**. Crossroads: The ACM Magazine for Students. Vol. 17(1): 10 – 15.

27. Shaffer CD, Alvarez C, Bailey C, Barnard D, Bhalla Y, Chandrasekaran C, Chandrasekaran V, Chung H-M, Dorer DR, Du C, Eckdahl TT, Poet JL, Frohlich D, Goodman AL, Gosser Y, Hauser C, Hoopes L, Johnson D, Jones CJ, Kaehler M, Kokan N, Kopp OR, Kuleck GA, McNeil G, Moss R, Myka JL, Nagengast A, Morris R, Overvoorde PJ, Shoop E, Parrish S, Reed K, Regisford EG, Revie D, Rosenwald AG, Saville K, Schroeder S, Shaw M, Skuse G, Smith C, Smith M, Spana EP, Spratt M, Stamm J, Thompson JS, Wawersik M, Wilson BA, Youngblom J, Leung W, Buhler J, Mardis ER, Lopatto D, Elgin SCR. **2010**. The Genomics Education Partnership: Successful Integration of Research into Laboratory Classes at a Diverse Group of Undergraduate Institutions. *CBE Life Science Education* 9 (1): 55-69

28. Eckdahl, Todd T., Jeffery L. Poet, A. Malcolm Campbell, and Laurie J. Heyer. **2009**. Synthetic Biology as a New Opportunity for Multidisciplinary Undergraduate Research. *CUR Quarterly*. Winter Issue. 39 - 44 (front cover photo).

29. Baumgardner J*, Acker K*, Adefuye O*, Crowley S*, DeLoache W*, Dickson J*, Heard L*, Martens A*, Morton N*, Ritter M*, Shoecraft A*, Treece J*, Unzicker M*, Valencia A*, Waters M*, Campbell AM, Heyer LJ, Poet JL, Eckdahl TT. **2009**. Solving a Hamiltonian

Path Problem with a bacterial computer. *Journal of Biological Engineering*, 3: 11 (2009 JBE Outstanding Publication, Evaluated on F1000 Biology).

30. Hart SN*, Durbian FE, Dillman CB, Eckdahl TT. **2009**. Assessment of Allelic Variation among Massasauga Rattlesnake Populations via Microsatellite Analysis. *Transactions of the Missouri Academy of Science* 42: 30-38.

31. Lopatto D, Alvarez C, Barnard D, Chandrasekaran C, Chung H-M, Du C, Eckdahl TT, Goodman AL, Hauser C, Jones CJ, Kopp OR, Kuleck GA, McNeil G, Morris R, Myka JL, Nagengast A, Overvoorde PJ, Poet JL, Reed K, Regisford G, Revie D, Rosenwald A, Saville K, Shaw M, Skuse GR, Smith C, Smith M, Spratt M, Stamm J, Thompson JS, Wilson BA, Witkowski C, Youngblom J, Leung W, Shaffer CD, Buhler J, Mardis E, Elgin SCR. **2008**. Genomics Education Partnership. *Science* 322, 684-685.

32. Haynes KA, Broderick ML*, Brown AD*, Butner TL*, Dickson JO*, Harden WL*, Heard LH*, Jessen EL*, Malloy KJ*, Ogden BJ*, Rosemond S*, Simpson S*, Zwack E*, Campbell AM, Eckdahl TT, Heyer LJ, Poet, JL. **2008**. Engineering Bacteria to Solve the Burnt Pancake Problem. *Journal of Biological Engineering* 2:8 (2008 JBE Outstanding Publication).

33. Eckdahl TT, *Brown, AD, *Hart, SN, *Malloy, KJ, *Shott M, *Yiu G, Mays Hoopes LL, Heyer LJ. **2008**. Microarray Analysis of the *in vivo* Sequence Preferences of a Minor Groove Binding Drug. *BioMed Central Genomics* 9:32.

34. Haynes KA, Broderick ML*, Brown AD*, Butner TL*, Harden L*, Heard L, Jessen E*, Malloy K*, Ogden B*, Rosemond S*, Simpson S*, Zwack E*, Campbell AM, Eckdahl TT, Heyer LJ, Poet, JL. **2007**. Computing with Living Hardware. *IET Synthetic Biology* 1, 44-47.

35. Campbell AM, Ledbetter ML, Mays Hoopes LL, Eckdahl TT, Heyer LJ, Rosenwald AG, Fowlks E, Tonidandel S, Bucholtz B, Gottfried G. **2007**. Genome Consortium for Active Teaching (GCAT): Meeting the Goals of BIO2010. *CBE: Life Science Education* 6:109-118.

36. Campbell AM, Eckdahl TT, Fowlks E, Heyer LJ, Mays Hoopes LL, Ledbetter ML, Rosenwald AG. **2006**. Genome Consortium for Active Teaching (GCAT). *Science* 311, 1103-1104.

37. Bradford WD*****, Cahoon L, Freel SR*****, Mays Hoopes LL, Eckdahl TT. **2004**. An Inexpensive Gel Electrophoresis-Based PCR Method for Quantifying mRNA Levels. *Cell Biology Education* 4: 157-168.

38. Brewster JL, Beason B, Eckdahl TT, Evans I. **2004**. The Microarray Revolution: Perspectives from Educators. *Biochemistry and Molecular Biology Education* 32:217-227.

39. Eckdahl TT. **2004**. Review of: PLoS Biology. *Cell Biology Education* 3: 15-17.

40. Eckdahl TT. **2003**. The 50th Anniversary of the Discovery of the DNA Double Helix. *BIOS* 74 (4): 105-109.

41. Baker JC, Crumley RE, Eckdahl TT. **2002**. RAPD PCR in the Microbiology Teaching Laboratory: Identification of Bacterial Unknowns. *Biochemistry and Molecular Biology Education* 30: 394-397.

42. Gasper BR*, Koppelman JB, Schwery SP*, and Eckdahl TT. **2001**. Molecular Phylogenetic Analysis of Missouri Sculpins. *American Midland Naturalist* 146: 264-270.

43. Baker RL*, Chandler ML*, and Eckdahl TT. **2001**. Identification of *Cottus* Species in Montana Using Mitochondrial RFLP Analysis. *BIOS* 72: 83-87.

44. Eckdahl TT and Malone EA. **2001**. Technology and Society: Redefining Human Life. *Journal of College Science Teaching* 30: 262-266.

45. Eckdahl, TT and Malone EA. **2001**. Review of "Genome: The Autobiography of a Species in 23 Chapters." *Magill's Literary Annual 2001: Books of 2000.* Salem Press.

46. Albert FG, Eckdahl TT, Fitzgerald DJ, and Anderson JN. **1999**. Heterogeneity in the Actions of Drugs that Bind in the DNA Minor Groove. *Biochemistry* 38:10135-10146.

47. Dillman CB*, Banks SM*, Vorderstrasse TJ*, and Eckdahl TT. **1999**. Phylogenetic Analysis of Missouri Populations of Longear Sunfish. *Lepomis megalotis*. *BIOS* 71: 2-8.

48. Eckdahl TT. **1999**. Investigating DNA Supercoiling, *American Biology Teacher* 61: 214-216.

49. Eckdahl TT. **1996**. Biology Internet Resources. *BIOS* 67: 22-24.

50. Eckdahl TT and Anderson JN. **1990**. Conserved DNA Structures in Origins of Replication. *Nucleic Acids Research* 16: 1609-1617.

51. Eckdahl TT, Bennetzen JL and Anderson JN. **1989**. DNA Structures Associated with Autonomously Replicating Sequences from Plants. *Plant Molecular Biology* 12: 507-516.

52. Eckdahl TT and Anderson JN. **1988**. Bent DNA Is a Conserved Structure in an Adenovirus Control Region. *Nucleic Acids Research* 16: 2346.

53. Williams JS, Eckdahl TT and Anderson JN. **1988**. Bent DNA Functions as a Replication Enhancer in *Saccharomyces cerevisiae. Molecular and Cellular Biology* 8: 2763-2769.

54. Eckdahl TT and Anderson JN. **1987**. Computer Modeling of DNA Structures Involved in Chromosome Maintenance. *Nucleic Acids Research* 15: 8531-8545.

Books

1. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2019**. Genetics Diseases and Conditions: Newborn Screening for Genetic Diseases: Experiments on Plant Hybridization. Momentum Press.

2. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2018**. Genetics Diseases and Conditions: Obesity: The Venus of Willendorf. Momentum Press.

3. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2018**. Genetics Diseases and Conditions: Muscular Dystrophy: I'm Grateful I've Proved them Wrong. Momentum Press.

4. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2018**. Genetics Diseases and Conditions: Autism Spectrum Disorder: He Prefers to Play Alone. Momentum Press.

5. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2017**. Genetics Diseases and Conditions: Down Syndrome: One Smart Cookie. Momentum Press. Print ISBN: 9781944749613; E-book ISBN: 9781944749620.

6. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2017**. Genetics Diseases and Conditions: Hereditary Blindness and Deafness: the Race for Sight and Sound. Momentum Press. Print ISBN: 9781944749736; E-book ISBN: 9781944749743.

7. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2017**. Genetics Diseases and Conditions: Huntington's Disease: the Singer Must Dance. Momentum Press. Print ISBN: 9781944749651; E-book ISBN: 9781944749668

8. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2017**. Genetics Diseases and Conditions: Sickle Cell Disease: the Evil Spirit of Misshapen Hemoglobin. Momentum Press. Print ISBN: 9781944749750; E-book ISBN: 9781944749767.

9. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2016**. Genetics Diseases and Conditions: Hemophilia: the Royal Disease. Momentum Press. Print ISBN: 9781944749637; E-book ISBN: 9781944749644

10. Todd T. Eckdahl (A. Malcolm Campbell, Editor) **2016**. Genetics Diseases and Conditions: Cystic Fibrosis: the Salty Kiss. Momentum Press. Print ISBN: 9781944749552; E-book ISBN: 9781944749569

11. Rushin F, Ashley D, Baker J, Chevalier C, Daggett M, Eckdahl T, Hartman K, Koy K, Mills M, Sample V, Walton K. **2010**. Biology 101 Principles of Biology Laboratory Manual: A Learning Cycle Approach. 144 pp. Hayden McNeil Publishing.

12. Andresen WF, Ashley DC, Boutwell RA, Crumley RE, Eckdahl TT, Rachow TA, Robbins D, Rushin J. **1996**. Laboratory Inquires into Concepts of Biology, Kendall / Hunt Publishing Company.

Peer-Reviewed Federal Grants (11 NSF and 1 NIH; Total $4,051,721)

1. Eckdahl TT (PI), Poet JL. RUI: Collaborative Research: RUI: Broadening the Application of Programmed Evolution for Metabolic Engineering. NSF MCB 1613281. $491,883 Awarded September **2016**. Total award with collaborative grant to Davidson College $1,106,895.

2. Eckdahl TT (PI), Poet JL. RUI: BIOMAPS: Modular Programmed Evolution of Bacteria for Optimization of Metabolic Pathways. NSF MCB 1329350. $461,051 Awarded September **2013**. Total award with collaborative grant to Davidson College $1,045,965.

3. Eckdahl TT (PI), Poet JL. RUI: MPS-BIO: Collaborative Research: Design and Construction of Second-Generation Bacterial Computers. NSF MCB 1120558. $200,001 Awarded September **2011**. Total award with collaborative grant to Davidson College $400,001.

4. Campbell AM (PI), Poet JL, Heyer LJ, Eckdahl TT. Workshop: Synthetic Biology Workshops for Interdisciplinary Teams of Undergraduate Faculty to be held Summers of 2012-2014 at Janelia Farm Conference Center (Ashburn, VA). NSF DBI 1127271. $269,700 Awarded August **2011**.

5. Eckdahl TT (PI) and Poet JL. Collaborative Research: UBM Group: Synthetic Biology Research for Undergraduates (SyBR-U). NSF UBM DMS 0733955. $172,904 Awarded August **2007**. Total award with collaborative grant to Davidson College $345,904.

6. Campbell AM (PI), Eckdahl TT, Heyer LJ. Collaborative Proposal: GCAT DNA Microarray Workshops for 2007, 2008, and 2009. NSF DBI 0627478. $404,704 Awarded April **2006**.

7. Fowlks E (PI), Hoopes LL (PI), Campbell AM, Eckdahl TT, Heyer L, Ledbetter ML, Rosenwald A. Microarray Workshops for Faculty Teaching Underrepresented Minorities. NSF DBI. $121,297 Awarded April **2005**.

8. Hoopes LL (PI), Campbell AM, Eckdahl TT, Heyer L, and Salata, MW. Microarray Workshop for Undergraduate Faculty to be held Summer 2004 at Georgetown University, Washington, DC. NSF DBI 0408386. $39,640 Awarded February **2004**.

9. Eckdahl TT (PI), Baker JC, and Caldwell BD. Antitumor Drugs that Bind the DNA Minor Groove. NIH NCI Academic Research Enhancement Award. $132,000 Awarded July **2003**.

10. Hoopes LL (PI), Campbell AM, Eckdahl TT, Heyer L, and Salata, MW. Microarray Workshops for Undergraduate Faculty and Students: Rocket Science or Basic Science? To be held in Seattle, WA, Summer of 2003. NSF DBI IID/MU 0305176. $15,000 Awarded April **2003**.

11. Campbell AM (PI), Eckdahl TT, Heyer L, and Hoopes LL. "RUI: Acquisition of a DNA Microarray Reader System." NSF DBI MUE 0099720. $105,390 Awarded July 2001. NSF REU Supplement of $6045 Awarded February **2003**.

12. Eckdahl TT (PI), Andresen WF, Ashley DC, Boutwell RA, and Crumley RE. "DNA Amplification throughout the Biology Curriculum." NSF ILI. $59,180 Awarded May **1998**.

Laboratory Modules

1. Todd T. Eckdahl and A. Malcolm Campbell. 2010. Synthetic Biology: Using Bacterial Computers to Solve the Pancake Problem. Distributed by Modern Biology, Inc. http://www.modernbio.com/experiment/synthetic-biology-using-bacterial-computers-solve-pancake-problem

2. Malcolm Campbell and Todd T. Eckdahl. 2015. pClone: Exploring Promoters with Synthetic Biology. Distributed by Carolina Biological. http://www.carolina.com/transformation-dna-transfer-kits/pclone-exploring-promoters-with-synthetic-biology/FAM_211150.pr

Professional Activities

1994-Present. Research advisor to more than 200 undergraduate students who have been coauthors on 20 peer-reviewed publications and made more than 100 research presentations at state, regional, and national, and international conferences.

1998-Present. Founding member of the Genome Consortium for Active Teaching (GCAT). Lab coordinator and instructor for six NSF-sponsored GCAT microarray workshops and four synthetic biology workshops that trained over 320 faculty members to use microarrays and synthetic biology with students in teaching and research. GCAT Founder and Director, Dr. A. Malcolm Campbell, Davidson College.

2005-Present. Founding member of Genomics Education Partnership established to engage undergraduate students in genomic sequence finishing and annotation. Supported by Howard Hughes Medical Institute, Dr. Sarah Elgin, Director, Washington University.

2006-2010. Research advisor to undergraduate student teams competing in the annual International Genetically Engineered Machines (iGEM) competitions. 2006 team awarded Best Oral Presentation, 2007, 2008, 2009, and 2010 teams awarded Gold Medals.

2006-Present. Presentations on Synthetic Biology as a New Opportunity for Undergraduate Research. GCAT Workshops (2010-2014), Oberlin College (2012), Morehouse College GCAT Workshop (2009), Park University (2008), Missouri State University (2008), Macalester College (2008), Missouri Academy of Science (2008), Conference on Applied Learning (2008), University of Minnesota, Duluth (2007), Washington U Bridging Teaching and Research Workshop (2006).

2005-Present. Lectures on adult and embryonic stem cell technology to 15 different community groups, including Rotary Club, Citizens Coalition, MS Society, Church groups, Optimists Club, Young Entrepreneurs Club, Chamber of Commerce, Missouri Western Eggs and Issues, Heartland Hospital Board, Heartland Leadership Council, and Heartland Ethics Committee.

Service

1993 – Present. Institutional Service to Missouri Western State University: Service on the Missouri Western Strategic Planning, Strategic Plan Implementation Fund, Western Institute planning, Institutional Animal Care and Use, Professional Leave, Student Excellence Fund Evaluation committees and search committees for the Grants Director, assistant to the VPAA, Western Institute Dean, Dean of Liberal Arts and Sciences, University President.

2006–Present. Service as Chairperson of the Missouri Western Biology Department.

2002-Present. Contributed to the development and ongoing administration of the Missouri Western Summer Research Institute and Program of Research Teaching and Applied Learning (PORTAL), in which teams of faculty, undergraduates, and high school students engage in research in diverse disciplines. Led research teams in each summer.

1997-2006. Service as District Director for 33 institutions in Missouri, Kansas, and Nebraska. Organized annual conventions for student research presentations, reviewed student research proposals, installed eight new chapters.

1996-2014. Ashley, Cronk, Eckdahl, Wann. Creation and coordination of Missouri Western Multidisciplinary Research Day, 32 events, over 1600 student presentations.