Bruce E. Bowler
Publications

Research, review articles and patents:

1. **Bowler, B. E.**, Hollis, L. S., and Lippard, S. J. (1984). Synthesis and DNA binding and photonicking properties of acridine orange linked by a polymethylene tether to (1,2-diaminoethane)dichloroplatinum(II). *J. Am. Chem. Soc. 106*, 6102-6104. doi:10.1021/ja00332a070

2. **Bowler, B. E.**, and Lippard, S. J. (1986). Modulation of platinum antitumor drug binding to DNA by linked and free intercalators. *Biochemistry 25*, 3031-3038. doi:10.1021/bi00358a044

3. **Bowler, B. E.**, and Lippard, S. J. (1989). Platinum-intercalative complexes for the treatment of cancer. U.S. Patent 4,843,161; EPO Pat. 0 163 316 (issued May 16, 1990); Canadian Pat. Appl. 482,918 (1985) approved Dec. 27, 1989. http://patents.com/us-4843161.html

4. **Bowler, B. E.**, Ahmed, K., Sundquist, W. I., Hollis, L. S., Whang, E., and Lippard, S. J. (1989). Synthesis, characterization, and DNA-binding properties of (1,2-diaminoethane)dichloroplatinum(II) complexes linked to the DNA intercalator acridine orange by trimethylene and hexamethylene chains. *J. Am. Chem. Soc. 111*, 1299-1306. doi:10.1021/ja00186a022

5. **Bowler, B. E.**, Meade, T. J, Mayo, S. L., Richards, J. H., and Gray, H. B. (1989). Long-range electron transfer in structurally engineered pentaammineruthenium(histidine-62)cytochrome *c*. *J. Am. Chem. Soc. 111*, 8757-8759. doi:10.1021/ja00205a049

6. Beratan, D. N., Onuchic, J. N., Betts, J., **Bowler, B. E.**, and Gray, H. B. (1990). Electron tunnelling pathways in ruthenated proteins. *J. Am. Chem. Soc*. *112*, 7915-7921. doi:10.1021/ja00178a011

7. **Bowler, B. E.**, Raphael, A. L., and Gray, H. B. (1990). Long-range electron transfer in donor(spacer)acceptor molecules and proteins. *Prog. Inorg. Chem. 38*, 259-323. doi:10.1002/9780470166390.ch5/summary

8. Therien, M. J., **Bowler, B. E.**, Selman, M. A., Gray, H. B., Chang, I. J., and Winkler, J. R. (1991). Long-range electron transfer in heme proteins: Porphyrin-ruthenium electronic couplings in three Ru(His)Zncytochromes *c*. In *Adv. Chem. Ser. Vol 228, Electron Transfer in Inorganic, Organic, and Biological Systems* (J. Bolton, G.L. McLendon, N. Mataga, Eds.) pp. 191-199 American Chemical Society: Washington, DC. doi:10.1021/ba-1991-0228.ch012

9. Therien, M. J., Chang, J., Raphael, A. L., **Bowler, B. E.**, and Gray, H. B. (1991). Long-range electron transfer in metalloproteins. *Struct Bond. 75*, 109-129. doi:10.1007/3-540-53260-9_4

10. **Bowler, B. E.**, Dong, A., and Caughey, W. S. (1993). Effects of surface mutations on protein stability: A role for the denatured state. In *Miami Short Reports, Volume 3, Advances in Gene Technology: Protein Engineering and Beyond* (Brew, K. et al. Eds.) p. 8, Oxford University Press.

11. **Bowler, B. E.**, May, K.,* Zaragoza, T.,* York, P.,* Dong, A., and Caughey, W.S. (1993). Destabilizing effects of replacing a surface lysine of cytochrome *c* with aromatic amino acids: Implications for the denatured state. *Biochemistry 32*, 183-190. doi:10.1021/bi00052a024

12. **Bowler, B. E.**, Dong, A., and Caughey, W.S. (1994). Characterization of the guanidine-HCl denatured state of iso-1-cytochrome *c* by infrared spectroscopy. *Biochemistry 33*, 2402-2408. doi:10.1021/bi00175a008

13. Herrmann, L. M., **Bowler, B. E.**, Dong, A., and Caughey, W. S. (1995). The effects of hydrophilic to hydrophobic surface mutations on the denatured state of iso-1-cytochrome *c*: Investigation of aliphatic residues. *Biochemistry 34*, 3040-3047. doi:10.1021/bi00009a035

14. Herrmann, L. M., Flatt, P.,* and **Bowler, B. E.** (1996). Site-directed replacement of the invariant lysine 73 of *S. cerevisiae* iso-1-cytochrome *c* with all ribosomally-encoded amino acids. *Inorg. Chim. Acta 242*, 97-103. https://doi.org/10.1016/0020-1693(95)04854-5

15. Williamson, D. A., and **Bowler, B. E.** (1996). Synthesis of a beta-turn forming depsipeptide for hydrogen bond mediated electron transfer studies. *Tetrahedron 52*, 12357-12372. https://doi.org/10.1016/0040-4020(96)00743-0

16. Godbole, S., Dong, A., Garbin, K.,* and **Bowler, B. E.** (1997). A lysine 73→histidine variant of yeast iso-1-cytochrome *c*: Evidence for a native-like intermediate in the unfolding pathway and implications for *m* value effects. *Biochemistry 36*, 119-126. https://doi.org/10.1021/bi961915m

17. Herrmann, L. M., and **Bowler, B. E.** (1997). Thermal denaturation of iso-1-cytohrome *c* variants: Comparison with solvent denaturation. *Protein Sci. 6*, 657-665. https://doi.org/10.1002/pro.5560060315

18. Godbole, S., and **Bowler, B. E.** (1997). A histidine variant of yeast iso-1-cytochrome *c* that strongly affects the energetics of the denatured state. *J. Mol. Biol. 268*, 816-821. doi:10.1006/jmbi.1997.0999

19. From, N. B., and **Bowler, B. E.** (1998). Urea denaturation of staphylococcal nuclease monitored by Fourier transform infrared spectroscopy. *Biochemistry 37*, 1623-1631. doi:abs/10.1021/bi970620l

20. Hammack, B., Godbole, S., and **Bowler, B. E.** (1998). Cytochrome *c* folding traps are not due solely to histidine-heme ligation: Direct demonstration of a role for N-terminal amino group-heme ligation. *J. Mol. Biol. 275*, 719-724. doi:10.1006/jmbi.1997.1493

21. Hammack, B., Attfield, K.,* Clayton, D.,* Dec, E.,* Dong, A., Sarisky, C.,* and **Bowler, B. E.** (1998). The magnitude of changes in guanidine-HCl *m*-values in the protein, iso-1-cytochrome *c*, depends upon the substructure containing the mutation. *Protein Sci. 7*, 1789-1795. https://doi.org/10.1002/pro.5560070814

22. Williamson, D. A., and **Bowler, B. E.** (1998). Electron transfer through the hydrogen bonded interface of a beta-turn forming depsipeptide. *J. Am. Chem. Soc. 120*, 10902-10911. https://doi.org/10.1021/ja981384k

23. Kise, K. J., Jr., and **Bowler, B. E.** (1998). Enantioselective synthesis of an unnatural bipyridyl amino acid and its incorporation into a peptide. *Tetrahedron: Asymmetry 9*, 3319-3324. https://doi.org/10.1016/S0957-4166(98)00350-4

24. Godbole, S., and **Bowler, B. E.** (1999). Effect of pH on formation of a nativelike intermediate on the unfolding pathway of a Lys 73 → His variant of yeast iso-1-cytochrome *c*. *Biochemistry 38*, 487-495. https://doi.org/10.1021/bi981698k

25. Zhou, Y., **Bowler, B. E.**, Eaton, G. R., and Eaton, S. S. (1999). Electron spin lattice relaxation processes for S = 1/2 molecular species in glassy matrices or magnetically-dilute solids at temperatures between 10 and 300 K. *J. Magn Reson. 139,* 165-174. https://doi.org/10.1006/jmre.1999.1763

26. Williamson, D. A., and **Bowler, B. E.** (2000). Porphyrin to quinone electron transfer across a depsipeptide which forms an α-helical turn. *Inorg. Chim. Acta 297*, 47-55. https://doi.org/10.1016/S0020-1693(99)00341-2

27. Godbole, S., Hammack, B., and **Bowler, B. E.** (2000). Measuring denatured state energetics: Deviations from random coil behavior and implications for the folding of iso-1-cytochrome *c*. *J. Mol. Biol. 296*, 217-228. https://doi.org/10.1006/jmbi.1999.3454

28. Zhou, Y., **Bowler, B. E.**, Eaton, G. R. and Eaton, S. S. (2000). Electron spin-lattice relaxation rates for high-spin Fe(III) complexes in glassy solvents at temperatures between 6 and 298 K. *J. Magn. Reson. 144*, 115-122. https://doi.org/10.1006/jmre.2000.2047

29. Zhou, Y., **Bowler, B. E.**, Lynch, K., Eaton, G. R., and Eaton, S. S. (2000). Interspin distances in spin-labeled met myoglobin variants determined by saturation recovery EPR. *Biophys. J. 79*, 1039-1052. https://doi.org/10.1016/S0006-3495(00)76358-2

30. Nelson, C. J., and **Bowler, B. E.** (2000). The pH dependence of formation of a partially unfolded state of a Lys73→His variant of iso-1-cytochrome *c*: Implications for the alkaline

conformational transition of cytochrome *c*. *Biochemistry 39*, 13584-13594. doi:10.1021/bi0017778

31. Hammack, B. N., Smith, C. R.,* and **Bowler, B. E.** (2001). Denatured state thermodynamics: Residual structure, chain stiffness and scaling factors. *J. Mol. Biol. 311*, 1091-1104. https://doi.org/10.1006/jmbi.2001.4909

32. Nelson, C. J., LaConte, M. J.,* and **Bowler, B. E.** (2001). Direct detection of heat and cold denaturation for partial unfolding of a protein. *J. Am. Chem. Soc. 123*, 7453-7454. https://doi.org/10.1021/ja016144a

33. Kise, K. J., Jr., and **Bowler, B. E.** (2002). A ruthenium(II) tris(bipyridyl) amino acid: Synthesis and direct incorporation into an α-helical peptide by solid phase peptide synthesis. *Inorg. Chem. 41*, 379-386. https://doi.org/10.1021/ic026166d

34. Smith, C. R.,* Mateljevic, N., and **Bowler, B. E.** (2002). Effects of topology and excluded volume on denatured state conformational properties. *Biochemistry 41*, 10173-10181. https://doi.org/10.1021/bi0259249

35. Kise, K. J., Jr., and **Bowler, B. E.** (2002). Induction of helical structure in a heptapeptide with a metal crosslink: Modification of the Lifson-Roig helix-coil theory to account for covalent crosslinks. *Biochemistry 41*, 15826-15837. https://doi.org/10.1021/bi026608x

36. Smith, C. R.,* Wandschneider, E., and **Bowler, B. E.** (2003). Effect of pH on the iso-1-cytochrome *c* denatured state: Changing constraints due to heme ligation. *Biochemistry 42*, 2174-2184. https://doi.org/10.1021/bi026827i

37. Kise, K. J., Jr., and **Bowler, B. E.** (2003). Electron transfer through a prenucleated bimetalated alanine-based peptide helix. *Inorg. Chem. 42*, 3891-3897. https://doi.org/10.1021/ic010617x

38. Wandschneider, E., Hammack, B. N., and **Bowler, B. E.** (2003). Evaluation of cooperative interactions between substructures of iso-1-cytochrome *c* using double mutant cycles. *Biochemistry 42*, 10659-10666. https://doi.org/10.1021/bi034958t

39. Zhang, M.-M., Ford, C. D.,* and **Bowler, B. E.** (2004). Estimation of the compaction of the denatured state by a protein variant involved in a reverse hydrophobic effect. *Protein J. 23*, 119-126. https://doi.org/10.1023/B:JOPC.0000020078.04452.ec

40. Wandschneider, E., and **Bowler, B. E.** (2004). Conformational properties of the iso-1-cytochrome *c* denatured state: Dependence on guanidine hydrochloride concentration. *J. Mol. Biol. 339*, 185-197. https://doi.org/10.1016/S0022-2836(04)00331-6

41. Martinez, R. E.,* and **Bowler, B. E.** (2004). Proton-mediated dynamics of the alkaline conformational transition of yeast iso-1-cytochrome *c*. *J. Am. Chem. Soc. 126*, 6751-6758. doi:10.1021/ja0494454 (PMID: 15161303)

42. Redzic, J. S., and **Bowler, B. E.** (2005). Role of hydrogen bond networks and dynamics in positive and negative cooperative stabilization of a protein. *Biochemistry 44*, 2900-2908. https://doi.org/10.1021/bi048218b

43. Kristinsson, R.,* and **Bowler, B. E.** (2005). Communication of stabilizing energy between substructures of a protein. *Biochemistry 44*, 2349-2359. https://doi.org/10.1021/bi048141r

44. Baddam, S., and **Bowler, B. E.** (2005). Conformationally-gated electron transfer in iso-1-cytochrome *c*: Engineering the rate of a conformational switch. *J. Am. Chem. Soc*. *127*, 9702-9703. https://doi.org/10.1021/ja0527368

45. Kurchan, E., Roder, H., and **Bowler B. E.** (2005). Kinetics of loop formation and breakage in the denatured state of iso-1-cytochrome *c*. *J. Mol. Biol*. *353*, 730-743. https://doi.org/10.1016/j.jmb.2005.08.034

46. Baddam, S., and **Bowler, B. E.** (2005). Thermodynamics and kinetics of formation of the alkaline state of a Lys 79→Ala/Lys 73→His variant of iso-1-cytochrome *c*. *Biochemistry 44*, 14956-14968. https://doi.org/10.1021/bi0515873

47. Baddam, S., and **Bowler, B. E.** (2006). Mutation of Asn 52 to Gly promotes the alkaline form of iso-1-cytochrome *c* and causes loss of cooperativity in acid unfolding. *Biochemistry 45*, 4611-4619. https://doi.org/10.1021/bi0524971

48. Baddam, S., and **Bowler, B. E.** (2006). Tuning the rate and pH accessibility of conformational electron transfer gates. *Inorg. Chem. 45*, 6338-6346. https://doi.org/10.1021/ic0603712

49. **Bowler, B. E.** (2007). Thermodynamics of protein denatured states. *Mol. BioSys*. 3, 88-99. https://doi.org/10.1039/B611895J

50. Tzul, F. O., Kurchan, E., and **Bowler, B. E.** (2007). Sequence composition effects on denatured state loop formation in iso-1-cytochrome *c* variants: Polyalanine versus polyglycine inserts. *J. Mol. Biol. 371*, 577-584. doi:10.1016/j.jmb.2007.04.060

51. Bandi, S., Baddam, S., and **Bowler, B. E.** (2007). The alkaline conformational transition and gated electron transfer with a Lys 79→His variant of iso-1-cytochrome *c*. *Biochemistry 46*, 10643-10654 https://doi.org/10.1021/bi700992y.

52. Bandi, S., and **Bowler, B. E.** (2008). Probing the bottom of a folding funnel using conformationally gated electron transfer reactions. *J. Am. Chem. Soc. 130*, 7540-7541, https://doi.org/10.1021/ja801941r.

53. **Bowler, B. E.** (2008). Thermodynamic approaches to understanding protein denatured states. In *Unfolded proteins: from denatured state to intrinsically disordered* (Creamer, T. P, Ed.), Nova Science Publishers, Inc., Hauppauge, NY, pp 23-50.

54. Ulyanov, D., **Bowler, B. E.**, Eaton, G. R., and Eaton, S. S. (2008). Electron-electron distances in spin-labeled low-spin metmyoglobin variants by relaxation enhancement. *Biophys. J. 95*, 5306-5316. https://doi.org/10.1529/biophysj.108.141887

55. Tzul, F. O., Kurchan, E., Roder, H., and **Bowler, B. E.** (2009). Competition between reversible aggregation and loop formation in denatured iso-1-cytochrome *c*. *Biochemistry 48*, 481-491. doi:10.1021/bi801977j (PMCID: PMC2645900)

56. Duncan, M. G., Williams, M. D.,* and **Bowler, B. E.** (2009). Compressing the free energy range of substructure stabilities in iso-1-cytochrome *c*. *Protein Sci. 18*, 1155-1164, https://doi.org/10.1002/pro.120.

57. Tzul, F. O., and **Bowler, B. E.** (2009). Importance of contact persistence in denatured state loop formation: Kinetic insights into sequence effects on nucleation early in folding. *J. Mol. Biol. 390*, 124-134. http://dx.doi.org/10.1016/j.jmb.2009.04.075. (PMCID: PMC2753253)

58. Rao, K. S., Tzul, F. O., Christian, A. K,* Gordon, T. N. and **Bowler, B. E.** (2009). Thermodynamics of loop formation in the denatured state of *Rhodopseudomonas palustris* cytochrome *c*': Scaling exponents and the reconciliation problem. *J. Mol. Biol.*, *392*, 1315-1325. doi:10.1016/j.jmb.2009.07.074 (PMCID: PMC2754802)

59. Tzul, F. O. and **Bowler, B. E.** (2010). Denatured states of low complexity polypeptide sequences differ dramatically from those of foldable sequences. *Proc. Natl. Acad. Sci. U.S.A. 107*, 11364-11369 (doi:10.1073/pnas.1004572107) (PMCID: PMC2895107)

60. Finnegan, M. L.* and **Bowler, B. E.** (2010). Propensities of aromatic amino acids versus leucine and proline to induce residual structure in the denatured state ensemble of iso-1-cytochrome *c*. *J. Mol. Biol*. *493*, 495-504 doi:10.1016/j.jmb.2010.09.004. (PMCID: PMC3025290)

61. Dar, T. A., Schaeffer, R. D, Daggett, V. and **Bowler, B. E.** (2011) Manifestations of native topology in the denatured state ensemble of *Rhodopseudomonas palustris* cytochrome *c*'. *Biochemistry 50*, 1029-1041. doi:10.1021/bi101551h (PMCID: PMC3329124) **Article highlighted on the *Biochemistry* home page when published**.

62. Cherney, M. M. and **Bowler, B. E.** (2011). Protein dynamics and function: Making new strides with an old warhorse, the alkaline conformational transition of cytochrome *c*, *Coord. Chem. Rev*. *255*, 664-677. doi:10.1016/j.ccr.2010.09.014

63. Bandi, S. and **Bowler B. E.** (2011). Probing the dynamics of a His73-heme alkaline transition in a destabilized variant of yeast iso-1-cytochrome c with conformationally gated electron transfer methods. *Biochemistry 50*, 10027–10040. doi:10.1021/bi201082h

64. **Bowler, B. E.** (2012) Characterization of the denatured state. In Egelman, E. H, editor: *Comprehensive Biophysics* Vol 3, The folding of Proteins and Nucleic Acids, Daggett, V., volume editor, Oxford: Academic Press, pp. 72-114. https://doi.org/10.1016/B978-0-12-374920-8.00305-2

65. **Bowler, B. E.** (2012). Residual structure in unfolded proteins. *Curr. Opin. Struct. Biol. 22*, 4-13. doi:10.1016/j.sbi.2011.09.002 (PMCID: PMC3440947)

66. Finnegan, M. L.* and **Bowler, B. E.** (2012). Scaling properties of glycine-rich sequences in guanidine hydrochloride solutions. *Biophysical J. 102*, 1969-1978. doi:10.1016/j.bpj.2012.03.049 (PMCID: PMC3328712)

67. Khan, Md. K. A. and Miller, A. L.; **Bowler, B. E**. (2012). Tryptophan stabilizes His-heme loops in the denatured state only when it is near a loop end. *Biochemistry 51*, 3586-3595. doi:10.1021/bi300212a. (PMCID: PMC3341509)

68. Khan, Md. K. A. and **Bowler, B. E**. (2012). Conformational properties of polyglutamine sequences in guanidine hydrochloride solutions. *Biophys. J. 103*, 1989-1999. doi:10.1016/j.bpj.2012.09.041 (PMCID: PMC3491724)

69. Bandi, S. and **Bowler, B. E.** (2013). A cytochrome *c* electron transfer switch modulated by heme ligation and isomerization of a peptidyl-prolyl bond. Biopolymers, *Peptide Science 100*, 114-124. doi:10.1002/bip.22164/abstract (PMID: 23335173, PMC Journal – In Process)

70. Cherney, M. M., Junior, C.* and **Bowler, B. E.** (2013). Mutation of trimethyllysine-72 to alanine enhances His79-heme mediated dynamics of iso-1-cytochrome *c*. *Biochemistry 52*, 837-846. doi:10.1021/bi301599g (PMID: 23311346)

71. Cherney, M. M., Junior, C. C.,* Bergquist, B. B.* and **Bowler, B. E.** (2013) Dynamics of the His79-heme alkaline transition of yeast iso-1-cytochrome *c* probed by conformationally gated electron transfer with Co(II)bis(terpyridine). *J. Am. Chem. Soc. 135*, 12772-12782. doi:10.1021/ja405725f (PMCID: PMC3856690)

72. McClelland, L. J., Mou, T. C., Jeakins-Cooley, M. E.,* Sprang, S. R. and **Bowler, B. E.** (2014) Structure of a mitochondrial cytochrome *c* conformer competent for peroxidase activity, *Proc. Natl. Acad. Sci. USA* 111, 6648-6653. doi:10.1073/pnas.1323828111 (PMCID: PMC4020089)

73. Bandi, S., and **Bowler, B. E.**, (2015) Effect of an Ala81His mutation on the Met80 loop dynamics of iso-1-Cytochrome *c*, *Biochemistry* 54, 1729-1742. doi:10.1021/bi501252z (PMID: 25671560)

74. McClelland, L. J., Seagraves, S. M, Khan, Md K. A., Cherney, M. M., Bandi, S., Culbertson, J. E.* and Bowler, B. E. (2015) The response of Ω-loop D dynamics to truncation of trimethyllysine 72 of yeast iso-1-cytochrome *c* depends on the nature of loop

deformation. *J. Biol. Inorg. Chem*. 20, 805-819. doi:10.1007/s00775-015-1267-1 (PMID 25948392, PMC in process).

75. Stine, J. M., Sun, Y., Armstrong, G., **Bowler, B. E.**, and Briknarová. K. (2015) Structure and Unfolding of the Third Type III Domain from Human Fibronectin. *Biochemistry 54(44)*, 6724–6733, https://doi.org/10.1021/acs.biochem.5b00818.

76. Goldes, M. E.,* Jeakins-Cooley, M. E.,* McClelland, L. J., Mou, T.-C., and Bowler, B. E. (2016) Disruption of a hydrogen bond network in human versus spider monkey cytochrome *c* affects heme crevice stability. *J. Inorg. Biochem. 158*, 62-69, https://doi.org/10.1016/j.jinorgbio.2015.12.025.

77. McClelland, L. J., and Bowler, B. E. (2016) Lower protein stability does not necessarily increase local dynamics. *Biochemistry 55*, 2681–2693, doi:10.1021/acs.biochem.5b01060.

78. McClelland, L. J., Steele, H. B. B., Whitby, F. G., Mou, T.-C., Holley, D., Ross, J. B. A., Sprang, S. R., and Bowler, B. E. (2016) Cytochrome c can form a well-defined binding pocket for hydrocarbons, *J. Am. Chem. Soc. 138*, 16770–16778, doi:10.1021/jacs.6b10745.

79. Elmer-Dixon, M. M., and Bowler, B. E. (2017) Rapid quantification of cardiolipin and DOPC lipid and vesicle concentration. *Anal. Biochem*. 520, 58-61, https://doi.org/10.1016/j.ab.2016.12.024.

80. Nold, S. M., Lei, H., Mou, T.-C., and Bowler, B. E. (2017) Effect of a K72A mutation on the structure, stability, dynamics and peroxidase activity of human cytochrome *c*, *Biochemistry 56*, 3358−3368, doi:10.1021/acs.biochem.7b00342.

81. Elmer-Dixon, M. M., and Bowler, B. E. (2017) Site A-mediated partial unfolding of cytochrome *c* on cardiolipin vesicles is species-dependent and does not require Lys72, *Biochemistry 56*, 4830−4839, doi:10.1021/acs.biochem.7b00694.

82. Danielson, T. A., Stine, J. M. Dar, T. A., Briknarova, K. and Bowler, B. E. (2017) Effect of an imposed contact on secondary structure in the denatured state of yeast iso-1-cytochrome c, *Biochemistry* 56, 6662−6676, doi:10.1021/acs.biochem.7b01002

83. Danielson, T. A. and Bowler, B. E. (2018) Helical propensity affects the conformational properties of the denatured state of cytochrome c′, *Biophys. J. 114*, 311–322, https://doi.org/10.1016/j.bpj.2017.11.3744.

84. Leavens, M. J., Cherney, M. M., Finnegan, M. L. and Bowler, B. E. (2018) Probing denatured state conformational bias in a three-helix bundle, UBA(2), using a cytochrome *c* fusion protein, *Biochemistry 57*, 1711−1721, doi:10.1021/acs.biochem.8b00015.

85. Elmer-Dixon, M. M., and **Bowler, B. E.** (2018) Rapid quantification of vesicle concentration for DOPG/DOPC and cardiolipin/DOPC mixed systems of variable composition. *Anal. Biochem*. 553, 12-14, https://doi.org/10.1016/j.ab.2018.05.013

86. Lei, H. and **Bowler, B. E.** (2018) Humanlike substitutions to Ω-loop D of yeast iso-1-cytochrome *c* only modestly affect dynamics and peroxidase activity, *J. Inorg. Biochem. 183,* 146-156, https://doi.org/10.1016/j.jinorgbio.2018.02.022.

87. Elmer-Dixon, M. M., and **Bowler, B. E.** (2018) Electrostatic constituents of cardiolipin interaction with site A of cytochrome *c*, *Biochemistry 57*, 5683−5695, doi:10.1021/acs.biochem.8b00704.

88. Lei, H., Nold, S. M., Jung Motta, L.,* and **Bowler, B. E.** (2019) Effect of V83G and I81A substitutions to human cytochrome *c* on acid unfolding and peroxidase activity below neutral pH, *Biochemistry 58*, 2921−2933, http://dx.doi.org/10.1021/acs.biochem.1029b00295.

89. Lei, H., and **Bowler, B. E.** (2019) The naturally occurring A51V variant of human cytochrome c destabilizes the native state and enhances peroxidase activity, *J. Phys. Chem. B 123*, 8939−8953,https://doi.org/10.1021/acs.jpcb.9b05869.

90. Elmer-Dixon, M. M., Hoody, J. Steele, H. B. B., Becht, D. C., and **Bowler, B. E.** (2019) Cardiolipin preferentially partitions to the inner leaflet of mixed lipid large unilamellar vesicles, *J. Phys. Chem. B 123*, 9111–9122, https://doi.org/10.1021/acs.jpcb.9b07690.

91. Steele, H. B. B., Elmer-Dixon, M. M., Rogan, J. T., Ross, J. B. A., and **Bowler, B. E.** (2020) The human cytochrome *c* domain-swapped dimer facilitates tight regulation of intrinsic apoptosis, *Biochemistry 59,* 2055-2068, https://doi.org/10.1021/acs.biochem.0c00326.

92. Elmer-Dixon, M. M., Xie, Z., Alverson, J. B., Priestley, N. D., and **Bowler, B. E.** (2020) Curvature dependent binding of cytochrome *c* to cardiolipin, *J. Am. Chem. Soc. 142,* 19532-19539, https://dx.doi.org/10.1021/jacs.0c07301.

93. Leavens, M. J., Spang, L. E., Cherney, M. M., and **Bowler, B. E.** (2021) Denatured state conformational biases in three-helix bundles containing divergent sequences localize near turns and helix capping residues, Biochemistry 60, 3071−3085, https://doi.org/10.1021/acs.biochem.1c00400.

94. Becht, D. C., Leavens, M. J., Zeng, B., Rothfuss, M. T., Briknarová, K., and **Bowler, B. E.** (2022) Residual structure in the denatured state of the fast-folding UBA(1) domain from the human DNA excision repair protein HHR23A, *Biochemistry 61*, 767–784, https://doi.org/10.1021/acs.biochem.2c00011.

95. Frederick, A. K., Thompson, S. L., Vakharia, Z. M., Cherney, M. M., Lei, H., Evenson, G., and **Bowler, B. E.** (2022) Effect on intrinsic peroxidase activity of substituting coevolved residues from Ω-loop C of human cytochrome *c* into yeast iso-1-cytochrome *c*, *J. Inorg. Biochem. 232,* 111819, https://doi.org/10.1016/j.jinorgbio.2022.111819.

96. Lei, H., Kelly, A. D., and **Bowler, B. E**. (2022) Alkaline state of the domain-swapped dimer of human cytochrome *c*: a conformational switch for apoptotic peroxidase activity, *J. Am. Chem. Soc. 144*, 21184-21195, https://doi.org/10.1021/jacs.2c08325.

97. Van Gundy, T., Patel, D., **Bowler, B. E.**, Rothfuss, M. T., Hall, A. J., Davies, C., Hall, L. S., Drecktrah, D., Marconi, R. T., Samuels, D. S., and Lybecker, M. C. (2023) c-di-GMP regulates activity of the PlzA RNA chaperone from the Lyme disease spirochete, *Mol. Microbiol. 119*, 711-727, https://doi.org/10.1111/mmi.15066.

98. Rothfuss, M. T.,* Becht, D. C.,* Zeng, B., McClelland, L. J., Yates-Hansen, C., and **Bowler, B. E.** (2023) High-accuracy prediction of stabilizing surface mutations to the three-helix bundle, UBA(1), with EmCAST, *J. Am. Chem. Soc. 145*, 22979-22992, https://doi.org/10.1021/jacs.3c04966.

99. Martin, W. J., McClelland, L. J., Nold, S. M.,* Boshae, K. L.,* and **Bowler, B. E.** (2024) Effect of proline content and histidine ligation on the dynamics of Ω-loop D and the peroxidase activity of iso-1-cytochrome *c*, *J. Inorg. Biochem. 252*, 112474, https://doi.org/10.1016/j.jinorgbio.2023.112474.

100. Frederick, A. K.,* and **Bowler, B. E.** (2024) Binding of yeast and human cytochrome *c* to cardiolipin nanodiscs at physiological ionic strength, *J. Inorg. Biochem. 260*, 112699, https://doi.org/10.1016/j.jinorgbio.2024.112699.

101. Bosco, J., Gagliano, E., Boshae, K. L., Statz, J. P., Wheeler, T. B., Cuello, D., Sliter, A., Newby, C., Lin, B., Demeler, A., Pierpont, C. L., Yates-Hansen, C., Sydor, M. J., Ferrini, M. E., Kuch, K. C., Cooper, B. S., Piggott, B. J., Certel, S. J., Hansen, K. B., Sprang, S. R., Bowler, B., McClelland, L., Berkmen, M., and Voronina, E. (2025) A galactose-based auto-expression system improves T7-inducible protein production in Escherichia coli, *Sci. Rep. 15*, 8936, https://doi.org/10.1038/s41598-025-91954-5.

102. Bandi, S., and Bowler, B. E. (2026) Mutation of Pro76 affects the dynamics of Ω-loop D of yeast Iso-1-cytochrome c: Application of gated electron transfer, *J. Inorg. Biochem. 280*, 113296, https://doi.org/10.1016/j.jinorgbio.2026.113296.

Encyclopedia Articles:

1. **Bowler, B. E.**, Gray, H. B., and Meade, T. J. (1989). Biochemistry: Electron transfer in proteins. In *McGraw-Hill Yearbook of Science and Technology*, pp. 53-55 McGraw-Hill Book Company: New York.

2. **Bowler, B. E.**, Ellis, W. R., Gray, H. B., and Meade, T. J. (1992). Electron transfer reaction. In *McGraw-Hill Encyclopedia of Science and Technology, 7th Edition*, Vol. 6 (ELE-EYE) pp. 220-223 McGraw-Hill Book Company: New York.