Neil Whitfield Blackstone

Education

1976	BA	Harvard University, magna cum laude
1985	PhD	Yale University

Experience

1985-7	Postdoctoral fellow, Academy of Natural Sciences, Philadelphia
1988-92	Postdoctoral associate, Department of Biology, Yale University
1992-3	Lecturer, Department of Biology, Yale University
1993-9	Assistant professor, Department of Biological Sciences, Northern Illinois University
1999-2006	Associate professor, Department of Biological Sciences, Northern Illinois University
1994-	Center for Biochemical and Biophysical Studies, Northern Illinois University
2006-	Professor, Department of Biological Sciences, Northern Illinois University

Funding

1994-8	“Mechanisms of heterochrony in hydractiniid hydroids,” National Science Foundation, Ecological and Evolutionary Physiology.
2001-5	“Redox control in the development and evolution of colonial hydroids,” National Science Foundation, Ecological and Evolutionary Physiology.
2003-4	Symposium “Model Systems for the Basal Metazoans,” National Science Foundation, Ecological and Evolutionary Physiology.
2003-4	Symposium “Model Systems for the Basal Metazoans,” National Institutes of Health, National Institute of Child Health and Development.
2005-11	"Collaborative Research: Assembling the tree of life—An integrative approach to investigating cnidarian phylogeny," National Science Foundation, AToL program.
2015	“Transcriptomics of bleaching and recovery in the alcyonacean octocoral *Sympodium* sp.” Collaborative HHMI Undergraduate Science Education Award

Workshops and Symposia

2002	“Genetic and cultural evolution of cooperation,” 23-28 June, Dahlem, Germany.
2002	“Cnidarian development and evolution,” 14-15 July, Irvine, California.
2003	“Cnidarian mechanisms of development,” 10-11 July, Lawrence, Kansas.
2003	“Hydra and the evolution of signaling pathways,” 14-18 September, Tutzing, Germany.
2004	“Model systems for the basal metazoans,” 5-9 January, New Orleans, Louisiana.
2005	“Darwinism and political liberty,” 14-17 April, New Orleans, Louisiana.

2005 “Hydra and the molecular logic of regeneration,” 19-22 September, Tutzing, Germany.
2006 “Biotechnology and liberty,” 16-19 March, Charleston, South Carolina.
2007 “Key transitions in animal evolution,” 3-7 January, Phoenix, Arizona.
2007 “Hydra and the development of animal form,” 17-20 September, Tutzing, Germany.
2007 “Evolution of moral sentiments,” 1-4 November, Charleston, South Carolina
2009 “Hydra and the evolution of multicellularity, 15-18 September, Tutzing, Germany
2010 “Evolution of cooperation: paradoxes of collectivity and individuality,” 6-7 December, Biocomplexity Institute, University of Indiana.
2011 “Memorial symposium: Britton Chance: life, times, and legacy,” June 3-4, University of Pennsylvania.
2012 “Energy transduction and genome function: an evolutionary synthesis,” 14-17 November, Royal Society of London, England.
2013 “Evolution viewed through the lens of cell signaling,” 24 April, American Society of Physiologists, Boston, Mass.
2013 “International symposium on medical imaging and spectroscopy,” 18-19 June, University of Pennsylvania.
2015 “Animal evolution: new perspectives from early emerging metazoans,” 14-17 September, Tutzing, Germany.
2015 “The evolutionary ecology of complex investment workshop,” 28-30 October, Santa Fe Institute.

Editor and editorial board

2010- Associate editor, Molecular Phylogenetics and Evolution
2010- Editorial board, Evos Journal: the Journal of the Evolutionary Studies Consortium
2015- Editorial board, Frontiers in Ecology and Evolution

Courses

2016 Henry Stewart Talks, Evolutionary physiology, co-editor

Books

Torday JS, Blackstone NW. Evidence-based Evolutionary Medicine. Wiley (in preparation).

Blackstone NW. Energizing Evolution: A Food’s-Eye View of Life. University of Chicago Press (in revision).

Short Publications and Reviews

1. Blackstone NW. 2012. Crustacea (Crustaceans). In: eLS. John Wiley & Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0001606.pub3

2. Blackstone NW. 2012. Arthropoda (Arthropods). In: eLS.John Wiley & Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0001603.pub3
3. Blackstone NW. 2009. A new look at some old animals. PLoS Biol 7(1):29-31.
4. Cherry Vogt KS, Blackstone NW. 2008. Stolon regression: a mechanism of environmental regulation of colony form in cnidarians. Comm Integr Biol 1:32-33.
5. Blackstone NW. 2008. Metabolic gradients: a new system for old questions. Curr Biol 18:R351-R353.
6. Blackstone NW. 2008. Book review of From Embryology to Evo-Devo. Amer J Human Biol 20:196-197.
7. Blackstone NW. 2007. Book review of *The Edge of Evolution*. Q Rev Biol 82:412-14.
8. Blackstone NW. 2007. Book review of *The Evolution of Death*. Integr Comp Biol 47:892-893.
9. Blackstone NW. 2007. Book review of *The Cell: a Molecular Approach*. 4th ed. Q Rev Biol 82:44.
10. Blackstone NW. 2005. Arthropoda (version 2.0). Encyclopedia of Life Sciences, Nature Publishing Group, London.
11. Blackstone NW. 2005. Crustacea (version 2.0). Encyclopedia of Life Sciences, Nature Publishing Group, London.
12. Blackstone NW. 2004. Book review of *The Cell: a Molecular Approach*. Q Rev Biol 79:418-419.
13. Blackstone NW. 2003. Des genes sous influence. Hors-Serie Sciences et Avenir, October-November:64-68.
14. Blackstone NW. 2003. Book review of *Reproductive Biology of Invertebrates*, volume IX, Progress in Asexual Reproduction. Q Rev Biol 78:239.
15. Blackstone NW. 2003. Book review of *Molecular Biology of the Cell*. Q Rev Biol 78:91-2.
16. Blackstone NW. 2002. Book review of *From Genesis to Genetics*. Q Rev Biol 77:319-320.
17. Blackstone NW. 2001. Book review of *The Cell: a Molecular Approach*. Q Rev Biol 76:229-230.
18. Blackstone NW. 2001. Arthropoda. Encyclopedia of Life Sciences, Nature Publishing Group, London.
19. Blackstone NW. 2001. Book review of *Molecular Cell Biology*. Q Rev Biol 76:76.
20. Blackstone NW. 1999. Crustacea. Encyclopedia of Life Sciences, Nature Publishing Group, London.
21. Blackstone NW. 1998. Book review of *Essential Cell Biology*. Q Rev Biol 73:500.
22. Blackstone NW. 1998. Book review of *Multicellular Animals*. Q Rev Biol 73:222-223.
23. Blackstone NW, Nadler SA. 1998. Book review of *Molecular Ecology and Evolution*. Syst Biol 47:176-179.
24. Blackstone NW. 1997. Argumentum ad ignorantiam. Q Rev Biol 72:445-447.
25. Blackstone NW. 1997. Development and evolution. Trends Ecol Evol 12:122-123.
26. Blackstone NW. 1997. Book review of *The peroxisome: a vital organelle*. Q Rev Biol 72:723.

Publications

1. Parrin AP, Goulet TL, Yaeger MA, Bross LS, McFadden CS, Blackstone NW. 2016. *Symbiodinium* migration mitigates bleaching in three octocoral species. J Exp Mar Biol Ecol 474:73-80.
2. Radzvilavicius AL, Blackstone NW. 2015. Conflict and cooperation in eukaryogenesis: implications for the timing of endosymbiosis and the evolution of sex. J R Soc Interface 12:20150584.
3. Harmata KL, Somova EL, Parrin AP, Bross LS, Glockling SL, Blackstone NW. 2015. Structure and signaling at hydroid polyp-stolon junctions, revisited. Biology Open 4:1087-1093.
4. Blackstone NW. 2015. The impact of mitochondrial endosymbiosis on the evolution of calcium signaling. Cell Calcium 57:133-139.
5. Blackstone NW. 2014. sAC as a model for understanding the impact of endosymbiosis on cell signaling. Biochim Biophys Acta 1842:2548-2554.
6. Netherton SE, Scheer DM, Morrison PR, Parrin AP, Blackstone NW. 2014. Physiological correlates of symbiont migration during bleaching of two octocoral species. J Exp Biol 217:1469-1477.
7. Harmata KL, Parrin AP, Morrison PR, McConnell KK, Bross LS, Blackstone NW. 2013. Quantitative measures of gastrovascular flow in octocorals and hydroids: toward a comparative biology of transport systems in cnidarians. Invert Biol 132:291-304.
8. Blackstone NW. 2013. Evolution and cell physiology. 2. The evolution of cell signaling from mitochondria to Metazoa. Amer J Physiol Cell Physiol 305:C909-C915.
9. Blackstone NW. 2013. Why did eukaryotes evolve only once? Genetic and energetic aspects of conflict and conflict mediation. Phil Trans Roy Soc B 368:20120266.
10. Parrin AP, Harmata KL, Netherton SE, Yaeger MA, Bross LS, Blackstone NW. 2012. Within-colony migration of symbionts during bleaching of octocorals. Biol Bull 223:245-256.
11. Cherry Vogt KS, Harmata KL, Coulombe HL, Bross LS, Blackstone NW. 2011. Causes and consequences of stolon regression in a colonial hydroid. J Exp Biol 214:3197-3205.
12. Harmata KL, Blackstone NW. 2011. Reactive oxygen species and the regulation of hyperproliferation in a colonial hydroid. Physiol Biochem Zool 84:481-493.
13. Parrin AP, Netherton SE, Bross LS, McFadden CS, Blackstone NW. 2010. Circulation of fluids in the gastrovascular system of a stoloniferan octocoral. Biological Bulletin 219:112-121.
14. Blackstone NW. 2010. A food's-eye view of animal transitions. In: DeSalle R, Schierwater B, (eds). Key Transitions in Animal Evolution. Science Publishers & CRC Press Enfield, pp 327-344.
15. Blackstone NW. 2009. Is evolutionary theory central to molecular cell biology? Evos Journal: the Journal of the Evolutionary Studies Consortium 1:34-43
16. Blackstone NW. 2009. Darwinian conservatism: one biologist's view. In Blanchard KC, Jr., (ed) Darwinian Conservatism: A Disputed Question. Imprint Academic, pp. 147-152.

17. Cherry Vogt KS, Blackstone NW. 2009. Redox signaling in the growth and development of colonial cnidarians. In Das D (ed) Methods in Redox Signaling. Mary Ann Liebert Press, pp. 138-146.
18. Blackstone NW. 2009. Mitochondria and the redox control of development in cnidarians. Semin Cell Dev Biol 20:330-336.
19. Cherry Vogt KS, Geddes GC, Bross LS, Blackstone NW. 2008. Physiological characterization of stolon regression in a colonial hydroid. J Exp Biol 211:731-740.
20. Blackstone NW. 2007. A food's-eye view of the transition from basal metazoans to bilaterians. Integr Comp Biol 47:724-733.
21. Doolen JF, Geddes GC, Blackstone NW. 2007. Multicellular redox regulation in an early-evolving animal treated with glutathione. Physiol Biochem Zool 80(3):317-325.
22. Berg AT, Blackstone NW. 2006. Concepts in classification and their relevance to epilepsy. Epilepsy Research 70S:S11-S19.
23. Blackstone NW. 2006. Multicellular redox regulation: integrating organismal biology and redox chemistry. BioEssays 28:72-77.
24. Blackstone NW. 2006. Charles Manning Child (1869-1954): the past, present, and future of metabolic signaling. J Exp Zool (MDE) 306B:1-7.
25. Blackstone NW, Bridge DM. 2005. Model systems for environmental signaling. Integr Comp Biol 45:605-614.
26. Blackstone NW, Steele RE. 2005. Introduction to the symposium. Integr Comp Biol 45:583-584.
27. Blackstone NW, Bivins MJ, Cherry KS, Fletcher RE, Geddes GC. 2005. Redox signaling in colonial hydroids: many pathways for peroxide. J Exp Biol 208:383-390.
28. Blackstone NW, Kelly MM, Haridas V, Gutterman JU. 2005. Mitochondria as integrators of information in an early-evolving animal: insights from a triterpenoid metabolite. Proc Roy Soc Lond B 272:527-531.
29. Blackstone NW, Cherry KS, Van Winkle DH. 2004. The role of polyp-stolon junctions in the redox signaling of colonial hydroids. Hydrobiologia 530/531:291-298.
30. Blackstone NW, Cherry KS, Glockling SL. 2004. Structure and signaling in polyps of a colonial hydroid. Invert Biol 123:43-53.
31. Blackstone NW, Jasker BD. 2003. Phylogenetic considerations of clonality, coloniality, and mode of germline development in animals. J Exp Zool (MDE) 297B:35-47.
32. Berg AT, Blackstone NW. 2003. Of cabbages and kings: perspectives on classification from the field of systematics. Epilepsia 44:8-12.
33. Blackstone NW. 2003. Redox signaling in the growth and development of colonial hydroids. J Exp Biol 206:651-658
34. Blackstone NW, Kirkwood TBL. 2003. Mitochondria and programmed cell death: "slave revolt" or community homeostasis? In Genetic and Cultural Evolution of Cooperation (P. Hammerstein, ed.), Cambridge, MA: MIT Press, 309-325.
35. Lachmann M, Blackstone NW, Haig D, Kowald A, Michod RE, Szathmáry E, Werren JH, Wolpert L. 2003. Group 3: Cooperation and conflict in the evolution of genomes, cells, and multicellular organisms. In Genetic and Cultural Evolution of Cooperation (P. Hammerstein, ed.), Cambridge, MA: MIT Press, 327-356.
36. Van Winkle DH, Blackstone NW. 2002. Variation in growth and competitive ability between sexually and clonally produced hydroids. Biol Bull 202:156-165.

37. Blackstone NW. 2001. Redox state, reactive oxygen species, and adaptive growth in colonial hydroids. J Exp Biol 204:1845-1853.
38. Ponczek LM, Blackstone NW. 2001. Effects of cloning rate on fitness-related traits in two marine hydroids. Biol Bull 201:76-83.
39. Blackstone NW. 2000. Redox control and the evolution of multicellularity. BioEssays 22:947-953.
40. Blackstone NW, Ellison AM. 2000. Maximal indirect development, set-aside cells, and levels of selection. J Exp Zool (MDE) 288:99-104.
41. Van Winkle DH, Longnecker K, Blackstone NW. 2000. The effects of hermit crabs on hydractiniid hydroids. Mar Ecol 21:55-67.
42. Blackstone NW. 1999. Redox control in development and evolution: evidence from colonial hydroids. J Exp Biol 202:3541-3553.
43. Blackstone NW, Green, DR. 1999. Evolution of a mechanism of cell suicide. BioEssays 21:84-88.
44. Blackstone NW. 1998. Morphological, physiological, and metabolic comparisons of runner-like and sheet-like inbred lines of a colonial hydroid. J Exp Biol 201:2821-2831.
45. Blackstone NW. 1998. Physiological and metabolic aspects of experimental heterochrony in colonial hydroids. J Evol Biol 11:421-438.
46. Blackstone NW. 1997. Dose-response relationships for experimental heterochrony in a colonial hydroid. Biol Bull 193:47-61.
47. Blackstone NW. 1997. Individuality in early eukaryotes and the consequences for metazoan development. Prog Mol Subcell Biol 19:23-43.
48. Van Winkle DH, Blackstone NW. 1997. Video microscopical measures of gastrovascular flow in colonial hydroids. Invert Biol 116:6-16.
49. Blackstone NW. 1996. Gastrovascular flow and colony development in two colonial hydroids. Biol Bull 190:56-68.
50. Blackstone NW. 1995. A units-of-evolution perspective on the endosymbiont theory of the origin of the mitochondrion. Evolution 49:785-796.
51. Wagner A, Blackstone NW, Cartwright P, Dick M, Misof B, Snow P, Wagner GP, Bartels J, Murtha M, Pendleton J. 1994. Surveying gene families with polymerase chain reaction: PCR selection and PCR drift. Syst Biol 43:250-260.
52. Blackstone NW, Buss LW. 1993. Experimental heterochrony in hydractiniid hydroids: why mechanisms matter. J Evol Biol 6:307-327.
53. Cunningham CW, Blackstone NW, Buss LW. 1992. Evolution of king crabs from hermit crab ancestors. Nature 355:539-542.
54. Blackstone NW, Buss LW. 1992. Treatment with 2,4-dinitrophenol mimics ontogenetic and phylogenetic changes in a hydractiniid hydroid. Proc Natl Acad Sci USA 89:4057-4061.
55. Blackstone NW. 1992. Heterochrony in hydractiniid hydroids: a hypothesis. Pp. 87-94 in Principles of the Organization of Organisms (A. Baskin and J. Mittenthal, eds.), Santa Fe Institute Studies in the Sciences of Complexity, Redwood City, CA: Addison-Wesley.
56. Blackstone NW, Buss LW. 1991. Shape variation in hydractiniid hydroids. Biol Bull 180:394-405.

57. Buss LW, Blackstone NW. 1991. An experimental exploration of Waddington's epigenetic landscape. Phil Trans R Soc Lond B 332:49-58.
58. Blackstone NW, Sheldon FH. 1991. The relationship between hetero- and homoduplex melting temperatures in studies of DNA-DNA hybridization. Syst Zool 40:89-95.
59. Blackstone NW. 1989. Size, shell-living, and carcinization in geographic populations of a hermit crab, *Pagurus hirsutiusculus*. J Zool Lond. (A) 217:477-490.
60. Blackstone NW, Yund PO. 1989. Morphological variation in a colonial marine hydroid: a comparison of size-based and age-based heterochrony. Paleobiology 15:1-10.
61. Blackstone NW. 1987. Size and time. Syst. Zool. 36:211-215.
62. Blackstone NW. 1987. Allometry and relative growth: pattern and process in evolutionary studies. Syst Zool 36:76-78.
63. Blackstone NW. 1987. Specific growth rates of parts in the hermit crab *Pagurus longicarpus*: a reductionist approach to the study of allometry. J Zool Lond (A) 211:531-545.
64. Blackstone NW. 1986. Variation of cheliped allometry in a hermit crab: the role of introduced periwinkle shells. Biol Bull 171:379-390.
65. Blackstone NW. 1986. Relative growth and specific growth rates in crustaceans. Growth 50:118-127.
66. Blackstone NW. 1985. The effects of shell size and shape on growth and form in the hermit crab *Pagurus longicarpus.* Biol Bull 168:75-90.
67. Blackstone NW. 1984. The effects of history on the shell preference of the hermit crab *Pagurus longicarpus* (Say). J Exp Mar Biol Ecol 81:225-234.
68. Blackstone NW, Joslyn, AR. 1984. Utilization and preference for the introduced gastropod *Littorina littorea* (L.) by the hermit crab *Pagurus longicarpus* (Say) at Guilford, Connecticut. J Exp Mar Biol Ecol 80:1-9.