

Gregory K. Davis
Curriculum Vitae

Department of Biology
Bryn Mawr College

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EDUCATION

- 2002 Ph.D. in Developmental Biology, Committee on Developmental Biology, University of Chicago
Thesis title: The changing role of Pax3/7 genes and the evolution of segmentation
Committee Award for achievement in developmental biology
Advisor: Nipam H. Patel
- 1995 M.A. in History and Philosophy of Science, Department of History and Philosophy of Science,
University of Pittsburgh
Advisor: James G. Lennox
- 1992 B.S. in Biology and Philosophy (double major), Duke University
Magna Cum Laude, Phi Beta Kappa, Phi Eta Sigma
Certificate in Women's Studies

Ad hoc Seminars & Courses (one week or longer)

- 2001 From Embryology to EvoDevo, Dibner Seminar in the History of Biology (one week), Marine Biological
Laboratory, Woods Hole, Massachusetts
- 1997 Embryology Course (six weeks), Marine Biological Laboratory, Woods Hole, Massachusetts
- 1994 Mass Extinction, Dibner Seminar in the History of Biology (one week), Marine Biological Laboratory,
Woods Hole, Massachusetts

RESEARCH EXPERIENCE

- 2014-present Associate Professor, Department of Biology, Bryn Mawr College
- McPherson Award (2024) for achievement and service to the community
- 2008-2013 Assistant Professor, Department of Biology, Bryn Mawr College
- Junior faculty leave (2011-2012) supported by the Elizabeth B. Jackson Biology Fund
- 2002-2008 Visiting Research Fellow, Dept. of Ecology and Evolutionary Biology, Princeton University
- Investigated *Drosophila* evolution and aphid polyphenism in laboratory of David L. Stern
- 1996-2002 Graduate Student, Committee on Developmental Biology, University of Chicago
- Investigated evolving role of pax3/7 genes in laboratory of Nipam H. Patel
- 1992-1993 Luce Scholar, Institute for Biomedical Sciences, Academia Sinica, Taipei, Taiwan
- Investigated vocalization response of PAG in neurophysiology laboratory of C. Y. Chai
- 1990-1991 Undergraduate Independent Study, Duke University Medical Center and Marine Laboratory
- Investigated morphological changes associated with learning and memory in octopus using learning trials and electron microscopy in laboratories of J. David Robertson
- 1988-1989 Laboratory Technician, Duke University Primate Center, Durham, North Carolina
- Assisted in husbandry of captive lemurs
 - Prepared and made casts of primate fossils in laboratory of P. J. Chatrath

PUBLICATIONS

(* denotes shared first authorship; § denotes BMC undergraduate)

1. **Davis GK** and MA Wund (2025) Developmental plasticity and phenotypic evolution. In: Kliman, R. M. (ed.), *Encyclopedia of Evolutionary Biology*, Oxford: Academic Press (revised 2025; originally published 2016).
2. **Davis GK**, Brisson JA, Bickel RD (2019) Evo-Devo Lessons Learned from Aphids. In: Nuno de la Rosa L, Müller G (Eds) *Evolutionary Developmental Biology*. Springer, Cham.
3. Stanhope L, Ziegler L, Haque T, Le L, Vincens M, **Davis GK**, Zieffler A, Brodfuehrer P, Preest M, Belisky J, Umbanhowar C, Overvoorde PJ (2017) Development of a Biological Science Quantitative Reasoning Exam (BioSQuaRE). *CBE-Life Sciences Education* 16(4): ar66.
4. DiBartolo PM, Gregg-Jolly L, Gross D, Manduca CA, Iverson E, Cooke DB 3rd, **Davis GK**, Davidson C, Hertz PE, Hibbard L, Ireland SK, Mader C, Pai A, Raps S, Siwicki K and JE Swartz (2016) Principles and Practices Fostering Inclusive Excellence: Lessons from the Howard Hughes Medical Institute's Capstone Institutions. *CBE-Life Sciences Education* 15(3): ar44.
5. Brisson JA and **GK Davis** (2016) The right tools for the job: Regulating polyphenic morph development in insects. *Current Opinion in Insect Science* 13: 1-6.
6. Perez KE, Hiatt A, **Davis GK**, Trujillo C, French DP, Terry M and RM Price (2013) The EvoDevoCI: A concept inventory for gauging students' understanding of evolutionary developmental biology. *CBE-Life Sciences Education* 12: 665-75.
7. Hiatt A, **Davis GK**, Trujillo C, Terry M, French DP, Price RM and KE Perez (2013) Getting to evo-devo: concepts and challenges for students learning evolutionary developmental biology. *CBE-Life Sciences Education* 12: 494-508.
8. **Davis GK** (2013) Crossing the threshold to deeper developmental biology. *Teaching and Learning Together in Higher Education*, Spring 2013.
9. Bickel RD, Cleveland HC§, Barkas J§, Jeschke CC§, Raz AA§, Stern DL and **GK Davis** (2013) The pea aphid uses a version of the terminal system during oviparous, but not viviparous, development. *EvoDevo* 4: 10.
10. **Davis GK** (2012) Cyclical Parthenogenesis and viviparity in aphids as evolutionary novelties. *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution* 318: 448-59.
11. Frankel N, **Davis GK**, Vargas D, Wang S, Payre F and DL Stern (2010) Phenotypic robustness conferred by apparently redundant transcriptional enhancers. *Nature* 466: 490-493.
12. Huang TY, Cook CE, **Davis GK**, Shigenobu S, Chen RPY and CC Chang (2010) Anterior development in the parthenogenetic and viviparous form of the pea aphid *Acyrtosiphon pisum*: *hunchback* and *orthodenticle* expression. *Insect Molecular Biology* 19: 75-85.
13. Shigenobu S, Bickel RD, Brisson JA, Butts T, Chang CC, Christiaens O, **Davis GK**, Duncan E, Janssen R, Ferrier DEK, Lu HL, McGregor AP, Miura T, Smagghe G, Smith J, van der Zee M, Velarde R, Wilson M, Dearden P and DL Stern (2010) Comprehensive survey of developmental genes in the pea aphid, *Acyrtosiphon pisum*: frequent lineage-specific duplications and losses of developmental genes. *Insect Molecular Biology* 19: 47-62.
14. International Aphid Genomics Consortium (2010) Genome Sequence of the Pea Aphid *Acyrtosiphon pisum*. *PLoS Biology* 8(2): e1000313.

15. **Davis GK***, Dietrich MR* and DK Jacobs (2009) Homeotic Mutants and the Assimilation of Developmental Genetics into the Evolutionary Synthesis, 1915-1952, in Cain, J and M Ruse (Eds.), *Descended From Darwin*, American Philosophical Society, Philadelphia, pp. 133-154. (*Transactions of the American Philosophical Society* 99(1): 133-154.)
16. Brisson JA and **GK Davis** (2008) Pea aphid, in Hunter, WB and C Kole (Eds.), *Genome Mapping and Genomics in Arthropods*, Springer, Berlin and Heidelberg, pp. 59-65.
17. **Davis GK**, Srinivasan D, Wittkopp PJ and DL Stern (2007) The function and regulation of *Ultrabithorax* in the legs of *Drosophila melanogaster*, *Developmental Biology* 308: 621-631.
18. Brisson JA*, **Davis GK*** and DL Stern (2007) Common genome-wide patterns of transcript accumulation underlying the wing polyphenism and polymorphism in the pea aphid, *Evolution & Development* 9: 338-346.
19. Braendle C, **Davis GK**, Brisson JA and DL Stern (2006) Wing dimorphism in aphids. *Heredity* 97: 192-9.
20. Wilson ACC, Dunbar HE, **Davis GK**, Hunter WB, Stern DL and NA Moran (2006) A dual-genome microarray for the pea aphid, *Acyrtosiphon pisum*, and its obligate bacterial symbiont, *Buchnera aphidicola*. *BMC Genomics* 7: 50.
21. **Davis GK**, D'Alessio JA and NH Patel (2005) Pax3/7 genes reveal conservation and divergence in the arthropod segmentation hierarchy, *Developmental Biology* 285: 169-184.
22. **Davis GK** and NH Patel (2003) Playing by pair-rules? *BioEssays* 25: 425-9.
23. **Davis GK** and NH Patel (2002) Short, long and beyond: molecular and embryological approaches to insect segmentation, *Annual Review of Entomology* 47: 669-99.
24. **Davis GK***, Jaramillo CA* and NH Patel (2001) Pax group III genes and the evolution of insect pair-rule patterning, *Development* 128: 3445-58.
25. Browne W, **Davis GK** and J McClintock (2000) Ancestors and variants: tales from the cryptic, *Evolution & Development* 2: 130.
26. **Davis GK** and NH Patel (1999) The origin and evolution of segmentation, *Trends in Genetics* 24: M68-M72.

ORAL PRESENTATIONS

(* denotes presenter; § denotes BMC undergraduate)

- 2023 Kwa YC*§, Sho M§, Frederick JE§, Li RY§ and **GK Davis**. Induction of reproductive fate in the Pea Aphid, Annual Meeting of the Society for Integrative and Comparative Biology
- 2020 Markstein M* and **GK Davis*** (co-organizers). Raising a Woke Generation of Geneticists: How and why to include eugenics history in genetics classes, workshop at TAGC 2020 Online
- 2020 Seselj M* and **GK Davis***. Teeth, Bones and Plastic Sex: Development Meets the Environment in Anthropology and Biology, a co-presentation for the Works In Progress series, Bryn Mawr College
- 2019 **Davis GK***. Reaction norms, plasticity and the (a)sex lives of aphids, Explanation, Idealization and Modeling Workshop (organizer: Collin Rice), Bryn Mawr College
- 2018 **Davis GK***. Evolutionary loss of developmental plasticity in the pea aphid, Annual Mid-Atlantic Meeting of the Society for Developmental Biology

- 2015 **Davis GK***. The optimization of optional sex: the mechanism and evolution of reproductive polyphenism in aphids, for the Evening Evolution Group, New York University
- 2015 **Davis GK***. The challenges of optional sex: the case of reproductive polyphenism in aphids, Department of Entomology, University of Maryland – College Park
- 2015 Spica E[§] and **GK Davis***. Induction of reproductive fate in the pea aphid, Annual Meeting of the Society for Integrative and Comparative Biology
- 2013 **Davis GK***. Patterning challenges for optional sex: the case of reproductive polyphenism in aphids, Department of Biology, Duke University
- 2013 **Davis GK***. Patterning challenges for optional sex: the case of reproductive polyphenism in aphids, Department of Biology, Rutgers University – Camden
- 2012 Bickel R[§], Cleveland H[§], Barkas J[§], Belletier N[§], Stern, DL and **GK Davis***. A potential patterning difference underlying oviparous and viviparous development in the pea aphid, Annual Mid-Atlantic Meeting of the Society for Developmental Biology
- 2012 **Davis GK***. Sex as an option: reproductive polyphenism in aphids, Department of Biology, The College of New Jersey
- 2011 **Davis GK***. Sex as an option: reproductive polyphenism in aphids, Department of Biological Science, Rowan University
- 2011 **Davis GK***. Sex and wings as options: the pea aphid as a model for developmental plasticity, Workshop on Emerging Model Arthropods, Annual Drosophila Research Conference
- 2011 **Davis GK***. Sex as an option: reproductive polyphenism in aphids, School of Biological Sciences, University of Nebraska-Lincoln
- 2010 **Davis GK***. The evolution of asexuality and viviparity in aphids and their consequences, Workshop titled “Perspectives on evolutionary novelty and evo-devo: integrating explanatory approaches in biology,” Redpath Museum, McGill University
- 2008 **Davis GK***, Sillers L, Parikh P, McGregor A, Orgogozo V, Delon I, Zanet J, Srinivasan D, Payre F and DL Stern, Morphological evolution through *cis* regulatory mutations at an enhancer of a single gene, Annual Meeting of the Society for Integrative and Comparative Biology
- 2006 **Davis GK***, Brisson JA and DL Stern, Of wings and sex: genomic analysis of polyphenism in the pea aphid, BRIDGES Symposium in Evolutionary Biology, New York University
- 2005 **Davis GK***, Wittkopp P and DL Stern, The evolution and regulation of *Ultrabithorax* in the pupal legs of *Drosophila*, The Developmental Basis of Evolutionary Change IV, University of Chicago
- 2005 **Davis GK***, Braendle C, Brisson JA and DL Stern, Approaches to polyphenism and polymorphism in the pea aphid, Plant & Animal Genome XIII
- 2002 **Davis GK*** and NH Patel, The changing role of pax3/7 genes during the evolution of protostomes, The Evolution of Developmental Diversity, Cold Spring Harbor Laboratory
- 2001 **Davis GK***, Jaramillo CA and NH Patel, Pax group III genes and the evolution of insect pair-rule patterning, Annual Meeting of the Society for Integrative and Comparative Biology, *Best Student Presentation in Division of Evolutionary Developmental Biology*
- 2000 **Davis GK***, Jaramillo CA and NH Patel, Expression of pairberry and the evolution of segmentation, Annual Midwest Meeting of the Society for Developmental Biology

FELLOWSHIPS & GRANTS

- 2023 \$1,700 Seed Grant for the proposal “Sustaining Tri-College Evolutionary Developmental Biology (Tri-Co EvoDevo)” from the Tri-College Faculty Forum (renewed in 2024).
- 2022 \$783,065 Inclusive Excellence 3 (IE3) 6-year Phase II Grant to Bryn Mawr College (institutional) from the Howard Hughes Medical Institute to support effective and inclusive teaching in STEM
- 2021 \$30,000 Inclusive Excellence 3 (IE3) 2-year Learning Grant to Bryn Mawr College (institutional) from the Howard Hughes Medical Institute to support effective and inclusive teaching in STEM
- 2021 \$600 Tri-College Faculty Forum Brainstorming Grant for the proposal “Revival of the Tri-College Evolutionary Developmental Biology (TriCo EvoDevo) Group”
- 2016 \$311,319 Research in Undergraduate Institutions 3-year award, National Science Foundation, for “Specification and evolution of reproductive fate in the pea aphid” (IOS-1557678)
- 2013 \$13,540 New Directions in Teaching and Research Grant, awarded to Gregory Davis and Joshua Shapiro through Bryn Mawr College’s Undergraduate Science Education Grant from the Howard Hughes Medical Institute
- 2011 \$276,190 Research in Undergraduate Institutions 3-year award, National Science Foundation, for “Divergent Patterning development in the pea aphid” (IOS-1051643), including supplemental Research Opportunity Award to fund collaboration with Dayalan Srinivasan, Rowan University
- 2003 National Research Service Award Individual Fellowship, National Institutes of Health, for three years of postdoctoral training
- 2003 Life Sciences Research Fellowship Finalist
- 2001 \$1,000 from Hinds Fund, Committee on Evolutionary Biology, University of Chicago, to study polychaete worm development in lab of Mark Martindale at Kewalo Marine Laboratory, Honolulu
- 1995 Dean of the Graduate School Scholarship for a semester of graduate tuition at University of Pittsburgh
- 1992 Luce Scholarship for a year of research at the Institute for Biomedical Sciences, Academia Sinica, Taipei, Taiwan
- 1991 Beinecke Memorial Scholarship for two years of graduate study in the history and philosophy of science
- 1990 Howard Hughes Undergraduate Fellowship for research on learning & memory in octopus
- 1988 Alumni Scholarship for four years of partial tuition at Duke University

TEACHING EXPERIENCE

- 2014-present Associate Professor, Department of Biology, Bryn Mawr College
- 2008-2013 Assistant Professor, Department of Biology, Bryn Mawr College
- 2001 Embryology (4-day segment of 6-week laboratory course, TA), Marine Biological Laboratory, Woods Hole
- 2001 Evolutionary Biology (week-long graduate lecture course, TA), Watson School of Biological Sciences, Cold Spring Harbor Laboratory
- 1998 Eucaryotic Molecular Biology (graduate course, TA), University of Chicago

- 1998 *Drosophila* Neurobiology (3-week laboratory course, TA), Cold Spring Harbor Laboratory
 1997 Animal Development (undergraduate course, TA), University of Chicago
 1995 Honors Introductory Biology (undergraduate course, TA), University of Pittsburgh

SERVICE

- 2021-present **Program Director**, HHMI Inclusive Excellence 3 (IE3) grant to Bryn Mawr College
 2022-2023 **Member**, Leadership Team, HHMI IE3 Learning Community Cluster 4 (LCC4)
 2021-2023 **Mentor Co-coordinator**, STEM in the Liberal Arts Program, Bryn Mawr College
 2020-2022 **Member**, Education Council, Society for Integrative and Comparative Biology
 2016-2018 **Posse Mentor**, for Bryn Mawr College's Boston 16 STEM Posse cohort in coordination with the Posse Foundation
 2017 **Co-organizer**, *Synthesis Meeting for 2012 Grantees*, Howard Hughes Medical Institute, Chevy Chase, MD, April 2017
 2015-2016 **Secretary**, Division of Evolutionary Developmental Biology, Society for Integrative and Comparative Biology
 2015-2016 **Program Director**, HHMI Undergraduate Science Education grant to Bryn Mawr College
 2009-2015 **Member**, Steering committee of EDEN (Evo-Devo-Eco Network), an NSF-funded research coordination network
 1999 **Co-organizer**, *The Developmental Basis of Evolutionary Change*, University of Chicago, May 1999 (co-wrote successful \$15,000 meeting grant from NASA, Life Sciences Division; invited speakers and co-organized meeting along with two fellow graduate students)

Society Memberships:

Pan-American Society for Evolutionary Developmental Biology, 2015-present
 Society for Integrative and Comparative Biology, 2000-present
 Society for Developmental Biology, 1999-present
 Genetics Society of America, 2000-2016

Reviewer:

Journals:

Biological Reviews
Biology of the Cell
Comparative Cytogenetics
Development
Developmental Biology
Development, Genes & Evolution
EvoDevo
Evolution & Development
Evolution
Gene
Integrative & Comparative Biology
Insect Molecular Biology
Journal of Insect Physiology
Organisms, Diversity and Evolution

Paleontological Research
Journal of Visualized Experiments
Science and Education

Textbook Publishers:

Elsevier
 Oxford University Press
 Sinauer

Granting Agencies:

National Science Foundation
 ad hoc reviewer (9x), panel member (5x)
 Agence Nationale de la Recherche (1x)
 Graduate Women in Science (1x)