

## Curriculum Vitae

### STEVAN J. ARNOLD

**BIRTHDATE:** October 11, 1944

**BIRTHPLACE:** Baltimore, Maryland

**MARITAL STATUS:** Married, two children

**SPOUSE:** Lynne D. Houck

#### EDUCATION:

B.A., 1966, Zoology, University of California, Berkeley

Ph.D., 1972, Zoology, University of Michigan, Ann Arbor

#### POSITIONS:

Miller Postdoctoral Fellow, Museum of Vertebrate Zoology, University of California, Berkeley, 1971-73.

Assistant Professor of Biology, University of California, Santa Barbara, 1973-74.

Assistant Professor of Biology, University of Chicago, 1974-80.

Associate Professor of Biology, University of Chicago, 1981-86.

Professor of Ecology and Evolution, University of Chicago, 1986-1997.

Professor of Zoology, Oregon State University, Corvallis, 1997-.

Chair of Zoology, Oregon State University, Corvallis, 1997-2002.

Curator of Amphibians & Reptiles, Oregon State Natural History Collections, 2002-.

Director, Oregon State Arthropod Collection, 2004-2009.

Visiting Scientist, Dept. Biomathematics, Oxford Univ., 11/1982-4/1983.

Visiting Scientist, Dept. Genetics, Univ. Edinburgh, 1-2/1984.

Visiting Scientist, Dept. Genetics, Univ. Washington, 3-4/1985.

Visiting Scientist, Dept. Biology, Univ. Utah, 1-3/1990.

Visiting Scientist, Sect. of Evolution & Ecology, Univ. Calif, Davis, 10/93-8/94.

#### PROFESSIONAL EXPERIENCE:

##### Society Service

*American Society of Ichthyologists and Herpetologists*, Board of Governors (1979-80) and various committees.

*USA National Academy of Science* Evolutionary Biology Fact-finding trip to Russia, July 1992.

Editor Nomination Committee, *American Society of Naturalists*, 1994-95.

Sewall Wright Award Committee, *American Society of Naturalists*, 2008-2010.

Workshop Committee, *American Society of Naturalists*, 2011-2013.

Financial Committee, *American Society of Naturalists*, 2012-2013.

##### Editorial Boards

Editorial Board, *Animal Behaviour*, 1978-82.

Associate Editor, *Evolution*, 1981-83.

Board of University Publications, *University of Chicago Press*, Univ. Chicago, 1983-87, 1995-97.

Associate Editor, *Theoretical Population Biology*, 1988-91.

*Faculty of 1000 Biology*<sup>5</sup>, Co-Head, Section on Evolutionary Ecology, 2004-  
<http://www.f1000biology.com/home>

### **Service for Funding Agencies**

NSF *Population Biology & Physiological Ecology* Panel, 1982-84.  
 NSF Panel for the *Presidential Faculty Fellows* Program, 1992.  
 NSF Committee of Visitors to Review the *Population Biology and Systematics*  
 Programs, 1993.  
 President's Workshop, *Gravitational Biology & Ecology*, NASA, 1998.  
 NSF Panel for Special Competition on *Integrated Research Challenges in*  
*Environmental Biology*, 1999.  
 NSF Panel for *Animal Behavior*, 2000 & 2002.

### **Organization of Conferences, Symposia, and Workshops**

Program Advisory Committee for *Dahlem Conference* on "Sexual Selection", Berlin  
 1985-86.  
 Program Advisory Committee for *Dahlem Conference* on "Complex Organismal  
 Functions", Berlin, 1987-88.  
 Co-Convener of Symposium on "Sexual Selection", *First International Congress of*  
*Herpetology*, Canterbury, 1988-89.  
 Organizer, Symposium on "Sexual Selection in Plants and Animals", *American*  
*Society of Naturalists*, Salt Lake City, 1993.  
 Organizing Committee, *Wenner-Gren/Swedish Royal Academy of Science*  
 Symposium on "Mating Systems Evolution", Kristineberg, 2006-2007.  
 Co-Organizer with Joseph Felsenstein, NESCent Course, "Evolutionary Quantitative  
 Genetics Workshop", Durham, NC, 8-13 August 2011.  
 Co-Organizer with Joseph Felsenstein, NESCent Course, "Evolutionary Quantitative  
 Genetics Workshop", Durham, NC, 6-11 August 2012.  
 Co-Organizer with Joseph Felsenstein, NESCent Course, "Evolutionary Quantitative  
 Genetics Workshop", Durham, NC, 5-10 August 2013.  
 Co-Organizer with Joseph Felsenstein, NIMBioS Tutorial, "Evolutionary Quantitative  
 Genetics Workshop", Knoxville, TN, 4-9 August 2014.

### **Miscellaneous Service**

External Review of Department of Ethology, Ecology and Evolution, Univ. Illinois,  
 Champaign-Urbana, Jan. 1990.  
 Consultant, Captive Breeding Specialist Group, *IUCN*, 1991-95.  
 Science Panel, *State of the Environment Report 2000*, State of Oregon, 1998-99,  
<http://www.oregon.gov/DAS/OPB/soer2000index.shtml>  
 External Review of Department of Zoology, Univ. Oklahoma, April 2004.

### **HONORS:**

Phi Beta Kappa, 1966  
 Faculty Citation as the Most Outstanding Undergraduate Student in Zoology,  
 Univ. California, Berkeley, 1966.  
 NIH Research Career Development Award, 1981-86.  
 Distinguished Herpetologist, *Herpetologists League*, 1992.  
 Fellow, *Animal Behavior Society*, 1992.  
 Walton Lecture, Mountain Lake Biological Station, 1992.

Vice President, *American Society of Naturalists*, 1993.  
 Fellows Lecture, *Animal Behavior Society*, 1995.  
 Pettingill Lecture, Univ. Michigan Biol. Station, Douglas Lk., 1996  
 President, *Society for the Study of Evolution*, 1998.  
 Donald W. Tinkle Memorial Lecture, Univ. Michigan, 2003.  
 Distinguished Ecologist Lectures, Kellogg Biological Station, 2003.  
 Gilfillan Memorial Award for Distinguished Scholarship in Science, Oregon State University, 2005.  
 Henry S. Fitch Award for Excellence in Herpetology, *American Society of Ichthyologists and Herpetologists*, 2008.  
 Fellow, *American Academy of Arts & Sciences*, 2009  
 President, *American Society of Naturalists*, 2012

#### **SOCIETY MEMBERSHIPS:**

Animal Behavior Society  
 American Society of Naturalists  
 American Society of Ichthyologists and Herpetologists  
 Society for the Study of Amphibians and Reptiles  
 Herpetologists League  
 Society for the Study of Evolution

#### **PUBLICATIONS:**

1. Arnold, S.J., 1972. Species densities of predators and their prey. *American Naturalist* 106: 220-236.
2. Arnold, S.J., 1976. Sexual behavior, sexual interference and sexual defense in the salamanders *Ambystoma maculatum*, *Ambystoma tigrinum*, and *Plethodon jordani*. *Zeitschrift für Tierpsychologie*. 42: 247-300.
3. Arnold, S.J., 1977. Polymorphism and geographic variation in the feeding behavior of the garter snake, *Thamnophis elegans*. *Science* 197: 676-678.
4. Arnold, S.J., 1977. The courtship behavior of North American salamanders with some comments on Old World salamandrids. Pp. 141-183 *IN*: D. Taylor and S. Guttman (eds.), *The Reproductive Biology of Amphibians*. Plenum Press, New York.
5. Arnold, S.J., 1978. Some effects of early experience on feeding responses in the common garter snake, *Thamnophis sirtalis*. *Animal Behaviour*. 26: 455-462.
6. Arnold, S.J. 1978. The evolution of a special class of modifiable behaviors in relation to environmental pattern. *American Naturalist*. 112: 415-427.
7. Arnold, S.J. and R.J. Wassersug, 1978. Differential predation on metamorphic anurans by garter snakes (*Thamnophis*): social behavior as a possible defense. *Ecology* 59: 1014-1022.
8. Wade, M.J. and S. J. Arnold, 1980. The intensity of sexual selection in relation to male sexual behaviour, female choice and sperm precedence. *Animal Behaviour* 28: 446-461.

9. Arnold, S.J., 1980. Inheritance and evolution of reproductive traits in garter snakes. *American Zoologist*. 20: 271 (Abstract).
10. Arnold, S.J., 1981. The microevolution of feeding behavior. Pp. 409-453 *IN*: A. Kamil and T. Sargent (eds.), *Foraging Behavior: Ecological, Ethological and Psychological Approaches*. Garland Press, New York.
11. Arnold, S.J., 1981. Behavioral variation in natural populations. I. Phenotypic, genetic and environmental correlations between chemoreceptive responses to prey in the garter snake, *Thamnophis elegans*. *Evolution* 35: 489-509.
12. Arnold, S.J., 1981. Behavioral variation in natural populations. II. The inheritance of feeding response in crosses between geographic races of the garter snake, *Thamnophis elegans*. *Evolution* 35: 510-515.
13. Arnold, S.J., 1981. Sociobiology evolving. *Evolution* 35: 824-825. (Book Review).
14. Arnold, S.J., 1982. A quantitative approach to antipredator performance: salamander defense against snake attack. *Copeia* 1982 (2): 247-253.
15. Marx, H., G. Rabb and S.J. Arnold, 1982. *Pythonodipsas* and *Spalerosophis*: colubrid snake genera convergent to the vipers. *Copeia* 1982 (3): 553-561.
16. Harvey, P.H. and S.J. Arnold, 1982. Female mate choice and runaway sexual selection. *Nature* 297: 533-534.
17. Feder, M.E., and S.J. Arnold, 1982. Anaerobic metabolism and behavior during predatory encounters between snakes (*Thamnophis elegans*) and salamanders (*Plethodon jordani*). *Oecologia* 53: 93-97.
18. Arnold, S.J. and L.D. Houck, 1982. Courtship pheromones: evolution by natural and sexual selection. Pp. 173-211 *IN*: M. Nitecke (ed.), *Biochemical Aspects of Evolutionary Biology*. Univ. Chicago Press, Chicago.
19. Kephart, D.G. and S.J. Arnold. 1982. Garter snake diets in a fluctuating environment: a seven year study. *Ecology* 63: 1232-1236.
20. Arnold, S.J., 1983. Sexual selection: the interface of theory and empiricism. Pp. 67-107 *IN*: P.P.G. Bateson (ed.), *Mate Choice*, Cambridge Univ. Press.
21. Arnold, S.J., 1983. Morphology, performance and fitness. *American Zoologist* 23: 347-361.
22. Garland, T., Jr. and S.J. Arnold. 1983. The effect of a full stomach on locomotory performance of juvenile garter snakes (*Thamnophis elegans*). *Copeia* 1983: 1092-1096.

23. Lande, R. and S.J. Arnold. 1983. The measurement of selection on correlated characters. *Evolution* 37: 1210-1226.
24. Ayres, F.A. and S.J. Arnold. 1983. Behavioural variation in natural populations. IV. Mendelian models and heritability of a feeding response in the garter snake, *Thamnophis elegans*. *Heredity* 51: 405-413.
25. Arnold, S.J. and A.F. Bennett. 1984. Behavioural variation in natural populations. III. Antipredator displays in the garter snake *Thamnophis radix*. *Animal Behaviour* 32:1108-1118.
26. Arnold, S.J. and M.J. Wade. 1984. On the measurement of natural and sexual selection: theory. *Evolution* 38:709-719.
27. Arnold, S.J. and M.J. Wade. 1984. On the measurement of natural and sexual selection: applications. *Evolution* 38:720-734.
28. Houck, L.D., S.J. Arnold and R.A. Thisted. 1985. A statistical study of mate choice: sexual selection in a plethodontid salamander (*Desmognathus ochrophaeus*). *Evolution* 39: 370-386.
29. Houck, L.D., S.G. Tilley and S.J. Arnold. 1985. Sperm competition in a plethodontid salamander: preliminary results. *Journal of Herpetology* 19: 420-423.
30. Lande, R. and S.J. Arnold. 1985. Evolution of mating preference and sexual dimorphism. *Journal of Theoretical Biology* 117: 651-664.
31. Arnold, S.J. 1985. Quantitative genetic models of sexual selection. *Experientia* 41: 1296-1310.
32. Arnold, S.J. 1986. Laboratory and field approaches to the study of adaptation. Pp. 157-179 *IN*: M. Feder and G. Lauder (eds.), *Predator-prey Relationships*. Univ. Chicago Press, Chicago.
33. Arnold, S.J. 1986. Limits on stabilizing, disruptive and correlational selection set by the opportunity for selection. *American Naturalist* 128: 143-146.
34. Arnold, S.J. 1986. Measuring selection. *Science* 232: 271-272 (Book Review).
35. Arnold, S.J. and T. Halliday. 1986. *Hyla regilla* (Pacific Treefrog). Predation. *Herpetological Review* 17:44.
36. Peterson, C.R. and S.J. Arnold. 1986. Individual variation in the thermoregulatory behavior of free-ranging garter snakes, *Thamnophis elegans*. *American Zoologist* 26:112A (Abstract).
37. Arnold, S.J. 1987. Natural selection in the wild. *Animal Behaviour* 35:308-309 (Book Review).

38. Arnold, S.J. 1987. The comparative ethology of courtship in salamandrid salamanders. 1. *Salamandra* and *Chioglossa*. *Ethology* 74:133-145.
39. Heisler, L., M. Andersson, S.J. Arnold, C.R. Boake, G. Borgia, G. Hausfater, M. Kirkpatrick, R. Lande, J. Maynard Smith, P. O'Donald, A.R. Thornhill and F. Weissing. 1987. The evolution of mating preferences and sexually selected traits. Pp. 96-118 *IN*: J.W. Bradbury and M.B. Andersson (eds.), *Sexual Selection: Testing the Alternatives*. Dahlem Konferenzen. John Wiley and Sons, Chichester.
40. Halliday, T.R. and S.J. Arnold. 1987. Multiple mating by females: a perspective from quantitative genetics. *Animal Behaviour* 35:939-941.
41. Arnold, S.J. 1987. Quantitative genetic models of sexual selection: a review. Pp. 283-315 *IN*: S. Stearns (ed.), *The Evolution of Sex and Its Consequences*. Birkhauser, Basel.
42. Arnold, S.J. 1987. Genetic correlation and the evolution of physiology. Pp. 189-212 *IN*: M.E. Feder, A.L. Bennett, W.W. Burggren and R.B. Huey (eds.), *New Directions in Ecological Physiology*. Cambridge Univ. Press.
43. Arnold, S.J. 1988. Behavior, energy and fitness. *American Zoologist* 28:815-827.
44. Houck, L.D., S.J. Arnold and A. Hickman. 1988. Tests for sexual isolation in plethodontid salamanders (genus *Desmognathus*). *Journal of Herpetology* 22:186-191.
45. Arnold, S.J. 1988. Snakes: ecology and evolutionary biology. (Book Review) *Herpetologica* 44: 259-260.
46. Arnold, S.J. 1988. Quantitative genetics and selection in natural populations: microevolution of vertebral numbers in the garter snake *Thamnophis elegans*. Pp. 619-636 *IN*: B.S. Weir, E.J. Eisen, M.M. Goodman, and G. Namkoong (eds.), *Proceedings of the Second International Conference on Quantitative Genetics*. Sinauer, Sunderland, MA.
47. Arnold, S.J. and A.F. Bennett. 1988. Behavioural variation in natural populations. V. Morphological correlates of locomotion in the garter snake *Thamnophis radix*. *Biological Journal of the Linnean Society* 34: 175-190.
48. Price, T., M. Kirkpatrick and S.J. Arnold. 1988. Directional selection and the evolution of breeding date in birds. *Science* 240: 798-799.
49. Arnold, S.J. and T.R. Halliday. 1988. Multiple mating: natural selection is not evolution. *Animal Behaviour* 36: 1547-1548.
50. Lynch, M. and S.J. Arnold. 1988. The measurement of selection on size and growth. pp. 47-59 *IN*: B. Ebenman and L. Persson (eds.), *Size-structured Populations, Ecology and Evolution*. Springer-Verlag, Berlin.

51. Arnold, S.J. 1989. Biology of the Reptilia, vol. 16 (Book Review). *American Scientist* 77: 187.
52. Arnold, S.J., P. Alberch, V. Csányi, R.C. Dawkins, S.B. Emerson, B. Frittsch, T.J. Horder, J. Maynard Smith, M.J. Starck, E.S. Vrba, G.P. Wagner, and D.B. Wake. 1989. How do complex organisms evolve? Pp. 403-433 *IN: D.B. Wake and G. Roth (eds.), Complex Organismal Functions: Integration and Evolution in Vertebrates*. Wiley, New York.
53. Emerson, S.B. and S.J. Arnold. 1989. Intra- and interspecific relationships between morphology, performance, and fitness. Pp. 295-314 *IN: D.B. Wake and G. Roth (eds.), Complex Organismal Functions: Integration and Evolution in Vertebrates*. Wiley, New York.
54. Huey, R.B., C.R. Peterson, S.J. Arnold and W.P. Porter. 1989. Hot rocks and not-so-hot rocks: thermal consequences of retreat site selection by garter snakes. *Ecology* 70: 931-944.
55. Phillips, P.C. and S.J. Arnold. 1989. Visualizing multivariate selection. *Evolution* 43: 1209-1222.
56. Verrell, P.A. and S.J. Arnold. 1989. Behavioral observations on sexual isolation between allopatric populations of the Mountain Dusky Salamander, *Desmognathus ochrophaeus*. *Evolution* 43: 745-755.
57. Arnold, S.J. and C.R. Peterson. 1989. A test for temperature effects on the ontogeny of shape in the garter snake *Thamnophis sirtalis*. *Physiological Zoology* 62: 1316-1333.
58. Arnold, S.J. 1990. Inheritance and the evolution of behavioral ontogenies. Pp. 167-189 *IN: M. Hahn, J. Hewitt, N. Henderson, and R. Benno (eds.), Developmental Behavior Genetics: Neural, Biometrical, and Evolutionary Approaches*. Oxford Univ. Press, New York.
59. Kirkpatrick, M., T. Price and S.J. Arnold. 1990. The Darwin-Fisher theory of sexual selection in monogamous birds. *Evolution* 44:180-193.
60. Tilley, S.G., P.A. Verrell and S.J. Arnold. 1990. Correspondence between sexual isolation and allozyme differentiation: a test in the salamander *Desmognathus ochrophaeus*. *Proceedings of the National Academy of Sciences U.S.A.* 87:2715-2719.
61. Arnold, S.J. 1990. Reproductive success: studies of individual variation in contrasting breeding systems. (Book Review). *American Scientist* 78:468.
62. Arnold, S.J. and T. Halliday. 1991. Multiple mating by females: design and interpretation of selection experiments. *Animal Behaviour* 43:178-179.

63. Duvall, D., S.J. Arnold and G.W. Schuett. 1992. Pitviper mating systems: ecological potential, sexual selection, and microevolution. Pp. 321-336 *IN: J.A. Campbell & E.D. Brodie, Jr. (eds.), The Biology of the Pitvipers.* Selva Press, Tyler, TX.
64. Arnold, S.J. 1992. Behavioural variation in natural populations. VI. Prey responses by two species of garter snakes in three areas of sympatry. *Animal Behaviour* 44:705-719.
65. Arnold, S.J. 1992. Constraints on phenotypic evolution. *American Naturalist* 140:S85-S107.
66. Arnold, S.J. 1993. Foraging theory and prey size - predator size relations in snakes. Pp. 87-115 *IN: R.A. Seigel & J.T. Collins (eds.), Snakes: Ecology and Behavior.* McGraw Hill, New York .
67. Duvall, D., G.W. Schuett and S.J. Arnold. 1993. Ecology and evolution of snake mating systems. Pp.165-200 *IN: R.A. Seigel & J.T. Collins (eds.), Snakes: Ecology and Behavior.* McGraw Hill, New York.
68. Arnold, S. J., N. L. Reagan and P. A. Verrell. 1993. Reproductive isolation and speciation in plethodontid salamanders. *Herpetologica* 49: 216-228.
69. Arnold, S.J. and D. Duvall. 1994. Animal mating systems: a synthesis based on selection theory. *American Naturalist* 143:317-348.
70. Arnold, S. J. 1994. Is there a unifying concept of sexual selection that applies to both plants and animals? *American Naturalist* 144:S1-S12.
71. Arnold, S. J. 1994. Bateman's principles and the measurement of sexual selection in plants and animals. *American Naturalist* 144:S126-S149.
72. Arnold, S.J. 1994. Multivariate inheritance and evolution: a review of concepts. pp. 17-48 *IN: C.R.P. Boake (ed.), Quantitative Genetics Studies of the Evolution of Behavior.* Univ. Chicago Press, Chicago.
73. Arnold, S.J. 1994. Constraints on phenotypic evolution. Pp. 258-278 *IN: L.A. Real (ed.), Behavioral Mechanisms in Evolutionary Biology.* Univ. Chicago Press, Chicago.
74. Arnold, S.J. 1995. Monitoring quantitative genetic variation and evolution in captive populations. Pp. 295-317 *IN: J. Ballou, M. Gilpin & T. Foose (eds.), Population Management for Survival and Recovery: Analytical Methods and Strategies in Small Population Conservation.* Columbia University Press .
75. Arnold, S. J., C. R. Peterson and J. Gladstone. 1995. Behavioural variation in natural populations. VII. Maternal body temperature does not affect juvenile thermoregulation in a garter snake (*Thamnophis elegans*). *Animal Behaviour* 50: 623-633.



76. Arnold, S. J. 1995. Fauna of Australia. Vol. 2A, Amphibia and Reptilia. (Book Review) *Copeia* 1995: 247-248..
77. Webster, M. S., S. Pruett-Jones, D. F. Westneat, and S. J. Arnold 1995. Measuring the effects of pairing success, extra-pair copulations and mate quality on the opportunity for sexual selection. *Evolution* 49: 1147-1157.
78. Arnold, S. J., P. A. Verrell and S. G. Tilley. 1996. The evolution of asymmetric sexual isolation: a polygenic model and a test case. *Evolution* 50:1024-1033.
79. Arnold, S. J. and H. J. Brockmann. 1996. Evolution of behavior, approaches to studying behavioral change. Pp. 673-682 *IN*: L. D. Houck & L. C. Drickamer (eds.), *Foundations of Animal Behavior*. Univ. Chicago Press, Chicago.
80. Kelley, K. C., S. J. Arnold and J. Gladstone. 1997. The effects of substrate and vertebral number on locomotion in the garter snake *Thamnophis elegans*. *Functional Ecology* 11:189-198.
81. Arnold, S. J. 1998. Snakes, the evolution of mystery in nature. (Book Review). *Comparative & Integrative Biology* 1:76-77.
82. Bronikowski, A. M. and S. J. Arnold. 1999. The evolutionary ecology of life history variation in the garter snake *Thamnophis elegans*. *Ecology* 80:2314-2325.
83. Bernardo, J. and S. J. Arnold. 1999. Mass-rearing of plethodontid salamander eggs. *Amphibia-Reptilia* 20:219-224.
84. Phillips, P. C. and S. J. Arnold. 1999. Hierarchical comparison of genetic variance-covariance matrices. I. Using the Flury hierarchy. *Evolution* 53:1506-1515.
85. Arnold, S. J. and P. C. Phillips. 1999. Hierarchical comparison of genetic variance-covariance matrices. II. Coastal-inland divergence in the garter snake, *Thamnophis elegans*. *Evolution* 53:1516-1527.
86. Osypka, N. M. and S. J. Arnold. 2000. The developmental effect of sex ratio on a sexually dimorphic scale count in the garter snake *Thamnophis elegans*. *J. Herpetology* 34:1-5.
87. Arnold, S. J. 2000. Systematics at the turn of a century. Pp. 167-178 *IN*: R. C. Bruce, R. G. Jaeger and L. D. Houck (Eds.), *The Biology of Plethodontid Salamanders*. Kluwer/Plenum, New York, New York.
88. Jones, A. G., G. Rosenqvist, A. Berglund, S. J. Arnold and J. C. Avise. 2000. The Bateman Gradient and the cause of sexual selection in a sex-role-reversed pipefish. *Proceedings of the Royal Society of London, B*. 267:1-4.
89. Arnold, S. J., J. Kagan and B. Taylor. 2000. Summary of current status of Oregon's biodiversity. Pp. 121-126 *IN*:. *The Oregon State of the Environment Report 2000*.

90. Arnold, S. J. and J. A. Anthony. 2000. Summary of the current status of exotic species in Oregon. Pp. 127-131 *IN: The Oregon State of the Environment Report 2000.*
91. Bronikowski, A. M. and S. J. Arnold. 2001. Cytochrome *b* phylogeny does not match subspecific classification in the western terrestrial garter snake, *Thamnophis elegans*. *Copeia* 2001: 508-513.
92. Alfaro, M. and S. J. Arnold. 2001. Molecular systematics and evolution of *Regina* and the thamnophiine snakes. *Molecular Phylogenetics & Evolution* 21: 408-423.
93. Arnold, S. J., M. E. Pfrender, A. G. Jones. 2001. The adaptive landscape as a conceptual bridge between micro- and macroevolution. *Genetica* 112/113: 9-32.
94. Jones, A. G., M. S. Blouin and S. J. Arnold. 2001. Genetic variation in two populations of the rough-skinned newt (*Taricha granulosa*) assessed using novel tetranucleotide microsatellite loci. *Molecular Ecology Notes* 1: 293-296.
95. Arnold, S. J. and C. R. Peterson. 2002. A model for optimal reaction norms: the case of the pregnant garter snake and her temperature sensitive embryos. *American Naturalist* 160: 306-316.
96. Jones, A. G., E. M. Adams and S. J. Arnold. 2002. Topping off: a mechanism of sperm competition in a vertebrate. *Proceedings of the National Academy of Sciences U.S.A.* 99: 2078-2081.
97. Boake, C. R. B., S. J. Arnold, F. Breden, L. Meffert, M. Ptacek, M. Ritchie, B. Taylor, J. B. Wolf, and A. J. Moore. 2002. Genetic tools for studying adaptation and the evolution of behavior. *American Naturalist* 160(Suppl.): S143-S159.
98. Jones, A. G., J. R. Arguello and S. J. Arnold. 2002. Validation of Bateman's principles: a genetic study of sexual selection and mating patterns in newts. *Proceedings of the Royal Society of London, B.* 269: 2533-2539.
99. Arnold, S. J., M. E. Pfrender, A. G. Jones. 2002. The adaptive landscape as a conceptual bridge between micro- and macroevolution. Pp. 9-32 *IN: A. P. Hendry and M. T. Kinnison (eds.). Microevolution – Rate, Pattern, Process.* Kluwer Academic Publishers.
100. Bernardo, J. and S. J. Arnold. 2002. *Gyrinophilus porphyriticus* (Spring Salamander). Male combat. *Herpetological Review* 33: 121-122.
101. Houck, L. D. and S. J. Arnold. 2003. Courtship and mating behavior. Pp. 383-424 *IN: D. Sever (ed.), Reproductive Biology and Phylogeny of Urodela.* M/s Science Publications, Endfield, NH.
102. Jones, A. G., S. J. Arnold and R. Bürger. 2003. Stability of the G-matrix in a population experiencing mutation, stabilizing selection, and genetic drift. *Evolution* 57: 1747-1760.
103. Arnold, S. J. 2003. Too much natural history, or too little? *Animal Behaviour* 65: 1065-1068.

104. Arnold, S. J. 2003. Performance surfaces and adaptive landscapes. *Integrative & Comparative Biology* 43: 367-375.
105. Jones, A. G., J. R. Arguello, and S. J. Arnold. 2004. Molecular parentage analysis in experimental newt populations: the response of mating system measures to variation in the operational sex ratio. *American Naturalist* 164: 444-456.
106. Mead, L. S. and S. J. Arnold. 2004. Quantitative genetic models of sexual selection. *Trends in Ecology & Evolution* 19: 264-271.
107. Watts R., C. Palmer, R. Feldhoff, P. Feldhoff, L. D. Houck, A. Jones, M. Pfrender, S. Rollmann, and S. J. Arnold. 2004. Stabilizing selection on behavior and morphology masks positive selection on the signal in a salamander pheromone signaling complex. *Molecular Biology & Evolution* 21: 1032-1041.
108. Jones, A. G., S. J. Arnold, and R. Bürger. 2004. Evolution and stability of the G-matrix on a landscape with a moving optimum. *Evolution* 58: 1639-1654.
109. DeGross, D. J., L. S. Mead, and S. J. Arnold. 2004. Novel tetranucleotide microsatellite markers from the Del Norte Salamander (*Plethodon elongatus*) with applications to its sister species the Siskiyou Mtn. Salamander (*P. stormi*). *Molecular Ecology Notes* 4: 352-354.
110. Adams, E. M., A. G. Jones, and S. J. Arnold. 2005. Multiple paternity in a natural population of a salamander with long-term sperm storage. *Molecular Ecology* 14: 1803-1810.
111. Palmer, C., R. A. Watts, R. Gregg, M. McCall, L. D. Houck, R. Highton, and S. J. Arnold. 2005. Lineage-specific differences in evolutionary mode in a salamander courtship pheromone. *Molecular Biology & Evolution* 22: 2243-2256.
112. Manier, M. K. and S. J. Arnold. 2005. Population genetic analysis identifies source-sink dynamics for two sympatric garter snake species (*Thamnophis elegans* and *T. sirtalis*). *Molecular Ecology* 14: 3965-3976.
113. O'Donnell, R. P. and S. J. Arnold. 2005. Evidence for selection on thermoregulation: effects of temperature on duration of pregnancy and embryo mortality in the garter snake *Thamnophis elegans*. *Copeia* 2005: 929-933.
114. Arnold, S. J. 2005. The ultimate causes of phenotypic integration: lost in translation. (Book Review). *Evolution* 59: 2059-2061.
115. Manier, M. K. and S. J. Arnold. 2006. Ecological correlates of population genetic structure: a comparative approach using a vertebrate metacommunity. *Proceedings of the Royal Society of London, B*. 273: 3001-3009.

116. Estes, S. and S. J. Arnold. 2007. Resolving the paradox of stasis: models with stabilizing selection explain evolutionary divergence on all timescales. *American Naturalist* 169: 227-244.
117. Palmer, C. A., R. A. Watts, L. D. Houck, A. Picard and S. J. Arnold. 2007. Evolutionary replacement of components in a salamander pheromone signaling complex: more evidence for phenotypic-molecular decoupling. *Evolution* 61: 202-215.
118. Houck, L. D., C. A. Palmer, R. A. Watts, S. J. Arnold, P. W. Feldhoff and R. C. Feldhoff. 2007. A new vertebrate courtship pheromone, PMF, affects female receptivity in a terrestrial salamander. *Animal Behaviour* 73: 315-320.
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120. Sparkman, A. M., S. J. Arnold and A. M. Bronikowski. 2007. An empirical test of evolutionary theories for reproductive senescence and reproductive effort in the garter snake *Thamnophis elegans*. *Proceedings of the Royal Society of London, B*. 274: 943-950.
121. Manier, M. K., C. M. Seyler, and S. J. Arnold. 2007. Adaptive divergence within and between ecotypes of the terrestrial garter snake, *Thamnophis elegans*, assessed with Fst-Qst comparisons. *Journal of Evolutionary Biology* 20: 1705-1719.
122. Jones, A. G., S. J. Arnold and R. Bürger. 2007. The mutation matrix and the evolution of evolvability. *Evolution* 61: 727-745.
123. Palmer, C. A., D. M. Hollis, R. A. Watts, L. D. Houck, M. A. McCall, R. G. Gregg, and S. J. Arnold. 2007. Plethodontid modulating factor (PMF), a hypervariable salamander courtship pheromone in the three-finger protein superfamily. *FEBS Journal* 274: 2300-2310.
124. Hohenlohe, P. A. and S. J. Arnold. 2008. MIPod: a hypothesis testing framework for microevolutionary inference from patterns of divergence. *American Naturalist* 171: 366-385.
125. Houck, L. D., R. A. Watts, S. J. Arnold, K. E. Bowen, K. M. Kiemnec, H. A. Godwin, P. W. Feldhoff, and Richard C. Feldhoff. 2008. A recombinant courtship pheromone affects sexual receptivity in a plethodontid salamander. *Chemical Senses* 33: 623-631.
126. Stinchcombe, J. R., A. F. Agrawal, P. A. Hohenlohe, S. J. Arnold, and M. W. Blows. 2008. Estimating non-linear selection gradients using quadratic regression coefficients: double or nothing? *Evolution* 62: 2435-2440.
127. Arnold, S. J., R. Bürger, P. A. Hohenlohe, B. C. Ajie and A. G. Jones. 2008. Understanding the evolution and stability of the G-matrix. *Evolution* 62: 2451-2461.

128. Kiemnec, K. M., R. A. Watts, R. G. Gregg, D. von Borstel, and S. J. Arnold. 2009. Evolutionary shifts in courtship pheromone composition revealed by EST analysis of plethodontid salamander mental glands. *Gene* 432:75-81.
129. Uyeda, J. C., S. J. Arnold, P. A. Hohenlohe, and L. S. Mead. 2009. Drift promotes speciation by sexual selection. *Evolution* 63: 583-594.
130. Arnold, S. J. 2009. Russell Lande. Pp. 675-676 *IN*: M. J. Ruse and J. Travis (eds.), *Evolution, The First Four Billion Years*. Harvard University Press, Cambridge, MA.
131. Palmer, C.A., R. A. Watts, A. P. Hastings, L. D. Houck, and S. J. Arnold. 2010. Rapid evolution of plethodontid modulating factor (PMF), a hypervariable salamander courtship pheromone, is driven by positive selection. *Journal of Molecular Evolution* 70: 427-440.
132. Barker, B. S., S. J. Arnold, and P. C. Phillips. 2010. A test of the conjecture that G-matrices are more stable than B-matrices. *Evolution* 64: 2601-2613.
133. Hohenlohe, P. A. and S. J. Arnold. 2010. The dimensionality of mate choice, sexual isolation and speciation. *Proceedings of the National Academy of Sciences U.S.A.* 107: 16583-165588.
134. Kiemnec-Tyburczy, K. M., R. A. Watts, and S. J. Arnold. 2011. Characterization of two putative cytokine receptors, gp130 and ciliary neutrophilic factor receptor, from terrestrial salamanders. *Genes & Genetic Systems*. 86: 131-137.
135. Uyeda, J. C., T. F. Hansen, S. J. Arnold, and J. Pienaar. 2011. The million-year wait for macroevolutionary bursts. *Proceedings of the National Academy of Sciences U.S.A.* 108: 15908-15913.
136. Miller, D. A., W. R. Clark, S. J. Arnold, and A. M. Bronikowski. 2011. Stochastic population dynamics and life-history evolution in the western terrestrial garter snake. *Ecology* 92: 1658-1671.
137. Kiemnec-Tyburczy, K. M., S. K. Woodley, R. A. Watts, S. J. Arnold, and L. D. Houck. 2011. Expression of vomeronasal receptors and related signaling molecules in the nasal cavity of a caudate amphibian (*Plethodon shermani*). *Chemical Senses* doi: 10.1093/chemse/bjr105.
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139. Jones, A. G., S. J. Arnold, R. Bürger, P. A. Hohenlohe, and J. C. Uyeda. 2012. The effects of stochastic and episodic movement of the optimum on the evolution of the G-matrix and the response of the trait mean to selection. *Journal of Evolutionary Biology* 25 :2210-2231.

140. Sparkman, A. M., A. M. Bronikowski, J. G. Billings, D. von Borstel, and S. J. Arnold. 2013. Avian predation and the evolution of life-histories in the garter snake *Thamnophis elegans*. *American Midland Naturalist* 170:66-85.
141. Losos, J. B., S. J. Arnold, G. Bejerano, E.D. Brodie III, D. Hibbett, H. E. Hoekstra, D. P. Mindell, A. Monteiro, C. Moritz, H. A. Orr, D. A. Petrov, S. S. Renner, R. E. Ricklefs, P. S. Soltis, and T. L. Turner. 2013. Evolutionary biology for the 21<sup>st</sup> century. *PLOS Biology* 11(1): e1001466. doi:10.1371/journal.pbio.1001466 .
142. Friesen, C. R., R. T. Mason, S. J. Arnold, and S. Estes. 2013. Patterns of sperm use in two populations of Red-sided Garter Snake (*Thamnophis sirtalis parietalis*) with long-term sperm storage. *Canadian Journal of Zoology* 92: 33-40.
143. Arnold, S. J. 2014. Phenotypic evolution: the ongoing synthesis. *American Naturalist* 183 (in press).
144. Jones, A. G., R. Bürger, and S. J. Arnold. 2014. Epistasis and natural selection shape the mutational architecture of complex traits. *Nature Communications* (in press).

#### **GRANTS:**

1. Spencer Foundation Grant, "An Experimental Investigation of Courtship Behavior in Salamanders", \$4,421; principal investigator, 1977-78.
2. NSF Grant (NSF BNS-7600619), "Evolution of Feeding Behavior in *Thamnophis*", \$50,000; principal investigator, 1/76-12/78.
3. NSF Grant (NSF DEB-7812560), "The Genetics, Ecology and Evolution of Feeding Behavior in *Thamnophis*", \$119,000; principal investigator, 7/78-6/81.
4. NSF Grant (NSF BNS-8014151), "Behavioral Determinants of Reproductive Success", \$94,218; principal investigator, 11/80-10/82.
5. NSF Grant (NSF BSR-8111489), "Quantitative Genetics and Selection in Natural Populations", \$280,000; principal investigator, 7/81-6/86.
6. PHS Grant, NIH Research Career Development Award. (NICHD 1 KO4-HD-00392-01), "Quantitative Genetics in Natural Populations", \$194,630 direct costs; principal investigator, 7/81-6/86.
7. PHS Grant, (NIH 1 RO1 GM 35492-01), "Genetics and Ecology of Maternal Thermoregulation", \$285,326 direct costs; principal investigator, 7/1/85-6/30/88.
8. NSF Grant (NSF BSR-8506766), "Collaborative Research on the Evolution of Ethological Isolation", \$220,000; principal investigator, 4/1/86-3/31/89.
9. NSF Grant (NSF BSR-8906703), "The Evolution of Ethological and Post-Mating Isolation", \$298,940; co-principal investigator with P. Verrell, 7/15/89-7/14/92.
10. NSF Grant (NSF BSR-8918581), "Comparative Quantitative Genetics", \$135,000; principal investigator; 3/1/90-2/28/92.
11. NSF Grant (NSF BSR-9119588), "Quantitative Genetics and Phylogenetics", \$502,000; principal investigator, 3/1/92-2/28/97.
12. NSF Grant (NSF DEB-9407844), "Ecological and Quantitative Genetics of Growth and Growth Plasticity", \$115,000; principal investigator (with J. Bernardo), 3/1/95-2/28/98.
13. NSF Grant (NSF IBN-9615473), "Collaborative Research: The Chemical Basis of Ethological Isolation", \$65,000; co-principal investigator with Lynne D. Houck, 7/1/97-12/31/98.

14. NSF Grant (NSF DEB-9903934), "Evolutionary Pattern and Process", \$342,849; co-principal investigator with Michael E. Pfrender, 10/15/99-10/14/02.
15. U.S. Department of Education Grant, Graduate Assistance in Areas of National Need Fellowship Program, "Integrated Training in the Analysis of Complex Behavior", \$304,500; Project Director, 9/1/00-8/31/03.
16. USDA Forest Service Cooperative Agreement (01-CR-11261952-212 PNW), "USDA Microsatellite Marker Development", \$13,970; S. J. Arnold, Principal Investigator (cooperative agreement with Deanna H. Olson), 3/20/01-12/01/01.
17. USDA Forest Service Cooperative Agreement (01-CA-11261951-219 PNW), "Conservation Biology of Rare and Uncommon Taxa in Pacific Northwest Forests", \$127,000; S. J. Arnold, Principal Investigator (cooperative agreement with Deanna H. Olson), 5/1/01-6/30/06.
18. NSF Grant (IRCEB-0110666), "Evolution of a Pheromone Signaling System: from Molecules to Mating", \$2,300,000; Arnold's portion of the budget = \$371,123; Lynne D. Houck principal investigator, S. J. Arnold and eight others are Co-PIs; 8/1/01-7/31/04.
19. NSF Grant (DEB-0323379), "Evolution and Ecology of Aging in Natural Populations of Long-Lived Vertebrates", \$28,007 + REU awards; Co-PI with Anne M. Bronikowski; 9/15/03-9/14/06.
20. NSF Grant (IBN-0416724), "Collaborative Research: The Evolution of Pheromone Signals and Their Role in Behavioral Isolation", \$318,878 + REU awards; Co-PI with Lynne D. Houck; 8/1/04-7/31/07 + 12 mo. extension My portion = ca 100K
21. NSF Grant (DEB-0447554), "Collaborative Research: A simulation approach to the evolution of the G-matrix", \$38,536; 4/15/05-3/31/09; Co-PI with Reinhard Bürger. My portion = ca 25K
22. USDA Forest Service Cooperative Agreement (PNW 05-CA-11261951-416), "Conservation Biology of Rare and Uncommon Taxa in Pacific Northwest Forests", \$154,652; S. J. Arnold, Principal Investigator (cooperative agreement with Deanna H. Olson), 8/31/05-9/30/08. My portion = ca 20K
23. NSF Grant (IOS-0818554), "Collaborative Research: Interaction Effects in a Pheromone Signaling System", \$373,607; Co-PI with Lynne D. Houck, 7/1/08-6/30/11. My portion = ca 50K
24. NSF Grant (BRC-0847965), "The Beetles of the Pacific Northwest: the Legacy of Melville Harrison Hatch", \$469,820; Co-PI with Christopher J. Marshall, 3/1/09-2/30/12.
25. NSF Grant (IOS-0843392), "Testing Models of Sexual Selection with Data on Behavioral Isolation", \$100,000; Co-PI with Paul A. Hohenlohe, 4/1/09-3/31/10. Salary for PAH; my portion = 0\$.
26. NSF Grant (DEB-0947162), "OPUS: Phenotypic Evolution, a Synthesis", \$210,216 (plus \$1,600 supplement); PI, 1/1/10-1/31/15.

#### **DOCTORAL DISSERTATION IMPROVEMENT & POSTDOC AWARDS:**

1. NSF BSR-8514049, Doctoral Improvement Award for David Lofsvold (student), "The Evolution of Quantitative Characters Due to Random Genetic Drift", \$3996; 1/1/86-12/31/87 (Faculty Sponsor).
2. NSF BSR-8714956 Doctoral Dissertation Award for Rafael Marquez (student), "Dissertation Research: Parental Care and the Mating Systems of the MidwifeToads (*Alytes* spp.)"; \$8,000, 02/01/88-01/31/90 (Faculty Co-sponsor with Lynne Houck).

3. NSF BSR-8714955 Doctoral Dissertation Award for Edmund D. Brodie, III (student), "Genetic Covariances Between Morphology and Behavior and Their Possible Maintenance Through Correlational Selection in Natural Populations"; \$8,000, 06/01/88-05/31/90 (Faculty Sponsor).
4. NSF BSR-8800888 Doctoral Dissertation Award for Nancy Reagan (student), "Evolution of Ethological and Postmating Isolation: An Analysis of *Plethodon* Hybrid Zones"; \$8,000, 06/01/88-05/31/90 (Faculty Co-sponsor with Lynne Houck).
5. NSF BSR-8815253 Doctoral Dissertation Award for Patrick C. Phillips (student), "Functional and Developmental Constraints on Morphological Evolution in the Tree Frog, *Pseudacris crucifer*"; \$8,000, 11/1/88-10/31/90 (Faculty Sponsor).
6. NSF BSR-8914686 Doctoral Dissertation Award for Frederic Janzen (student), "The Evolutionary Significance of Environmental Sex Determination"; \$7,000 for period 4/1/90-3/31/93 (Faculty Sponsor).
7. NSF DEB-9520694 Doctoral Dissertation Award for Anne M. Bronikowski (student), "Growth Rate Variation: Sources and Fitness Consequences"; \$12,000 for period 9/15/95-9/15/97 (Faculty Co-sponsor with Brian Charlesworth).
8. NSF Postdoctoral Fellowship in Biosciences Related to the Environment for Adam G. Jones (student), "Dirft fences, PIT tags and microsatellites: an ecological and molecular study of reproduction in the roughskin newt"; ca. \$75,000; 7/1/98-7/1/00 (Faculty Co-sponsor with Michael S. Blouin).
9. PHS Postdoctoral Award (F2GM20561A) for Adam G. Jones (student), "Modeling Multivariate Selection on Complex Characters"; \$76,748; 8/01/00-7/31/03 (Faculty sponsor).
10. NSF Bioinformatics Postdoctoral Fellowship for Louise S. Mead (student), "Sexual Isolation Across Entire Clades: A Novel Phylogenetic Approach Using Models of Evolutionary Process"; \$100,000; 9/01/01-8/31/03 (Faculty sponsor).
11. NSF DEB-0309017, Doctoral Dissertation Award for Mollie K. Manier (student), "Landscape Correlates of Population Genetic Structure in Three Vertebrate Species": \$12,000; 6/01/03-5/31/05 (Faculty Sponsor).
12. NSF Minority Postdoctoral Fellowship for Suzanne R. Estes (student), "Influence of mating system on patterns of parentage and fitness correlates in a garter snake model, *Thamnophis sirtalis parietalis*"; ca. \$100,000; 7/31/02-8/31/05 (Faculty Co-sponsor with Robert T. Mason).
13. PHS Postdoctoral Award (FGM076995A) for Paul A. Hohenlohe (student), "The Microevolutionary Role of Ancient Developmental Genes", ca. \$100,000; 8/26-06-8/27/08 (Faculty co-sponsor with William A. Cresko, Univ. Oregon).
14. NSF DEB-1011352, Doctoral Dissertation Award for Josef C. Uyeda (student), "Dissertation Research: Determining the Effect of Hybridization on the Evolvability of Phenotypic Traits Using genomic markers", \$14,961; 6/1/10-5/31/12 (Faculty Sponsor).
15. EPA 91731401 STAR Fellowship for Gwendolynn W. Bury (student), "An Integrated Approach to Gauge the Effects of Global Climate Change on Headwater Stream Ecosystems", \$126,000; 9/2011-8/2014 (Faculty Sponsor).

**INVITED SEMINARS AT DEPARTMENTS AND INSTITUTES:**

1971 Univ. California, Davis  
 Univ. California, Santa Barbara  
 Stanford Univ.  
 Univ. Maryland



- State Univ. N.Y., Stony Brook
- 1972 Univ. California, Berkeley  
Univ. California, San Diego  
Los Angeles County Museum of Natural History
- 1973 Univ. California, Santa Barbara  
Univ. Chicago
- 1974 Univ. Minnesota
- 1975 Duke Univ.  
Univ. Illinois, Circle  
Philadelphia Academy of Natural Science  
Field Museum of Natural History
- 1977 Univ. Sussex  
Univ. Oxford  
Univ. Notre Dame  
Chicago Herpetological Society  
Univ. Michigan
- 1978 Univ. California, Los Angeles  
Univ. Utah  
Univ. California, Berkeley
- 1979 Univ. California, Davis  
Stanford Univ.  
Univ. Washington  
Washington Univ.  
Philadelphia Acad. Nat. Sciences
- 1980 Univ. California, Irvine  
Univ. Michigan  
Univ. Minnesota (Itasca Biol. Stat.)
- 1981 Arizona State Univ  
Duke University  
Carleton College  
Univ. Kansas  
Western Michigan Univ.  
Northwestern University
- 1982 Florida State University  
Univ. California, Davis  
Univ. Nac. Automona de Mexico  
Univ. California, Irvine
- 1983 Univ. Oxford  
Univ. Sussex  
Univ. Cambridge  
Univ. Edinburgh  
Open Univ.  
Univ. Pisa  
Univ. Basel  
Univ. Torino  
Univ. Paris VII
- 1984 Purdue Univ.  
Univ. California, Berkeley  
Cornell Univ.

- Univ. Toronto
- McMaster Univ.
- Univ. Minnesota
- Univ. Edinburgh
- 1985 Univ. Utah
- Univ. California, Santa Barbara
- Univ. British Columbia
- Michigan State Univ. (Kellogg Biol. Stat.)
- Univ. Michigan
- Univ. California, Irvine
- Univ. Arizona
- Princeton Univ.
- Univ. Washington
- Uppsala Univ.
- 1986 Univ. Illinois, Champaign-Urbana
- 1987 Florida State Univ.
- W. Carolina State Univ.
- State Univ. N.Y., Stony Brook
- Brown Univ.
- Univ. Missouri, St. Louis
- Univ. Wyoming
- Univ. Bremen
- 1988 Wesleyan Univ
- Duke Univ.
- Univ. Kentucky
- 1989 Northern Illinois University
- Rutgers University
- Savanah River Ecology Lab
- Univ. Wisconsin
- 1990 Univ. Kansas
- Univ. Wyoming
- Idaho State University, Pocatello
- Harvard University
- Univ. Georgia
- 1991 Univ. California, Los Angeles
- Univ. Missouri, Columbia
- 1992 McGill Univ.
- Univ. Victoria
- Arizona State Univ., Tempe
- Mt. Lake Biological Station, Univ. Virginia
- Vavilov Institute of General Genetics, Moscow
- Zoological Institute, St. Petersburg
- Univ. Georgia
- 1993 Univ. Texas, Arlington
- Southeastern Louisiana University
- 1994 Univ. Oregon
- Univ. California, Davis
- Univ. California, Berkeley
- Princeton University

- Western Carolina University  
 1995 Washington State Univ., Pullman  
 1996 York University, Toronto  
 Michigan State Univ., East Lansing  
 Univ. South Florida  
 Oregon State University  
 1997 Univ. Texas, Austin  
 Univ. Florida, Gainesville  
 Duke University  
 1998 Reed College  
 Univ. Oregon  
 Univ. Montana  
 Univ. Pittsburgh  
 Arizona State Univ., Tempe  
 1999 Portland State University  
 Southeastern Louisiana University  
 Univ. South Carolina  
 North Carolina State Univ., Raleigh  
 Univ. Toronto  
 2000 Univ. Georgia  
 2001 Simon Fraser University  
 Univ. Oregon  
 Univ. Louisville  
 2002 Univ. California, Riverside  
 2003 Univ. Nevada, Reno  
 Univ. Michigan  
 Univ. Washington  
 Michigan State Univ., Kellogg Biol. Station  
 Univ. Pennsylvania  
 2004 Univ. California, Davis  
 Iowa State Univ., Ames  
 2005 Portland State Univ.  
 2006 Univ. Arizona, Tucson  
 Univ. California, Berkeley  
 2008 Univ. Oregon  
 Univ. California, Berkeley  
 2009 Univ. Ottawa  
 2010 Indiana Univ.  
 2011 Smith College  
 2013 University of Missouri, Columbia

**INVITED LECTURES AT SYMPOSIA AND WORKSHOPS:**

1. "Resource Partitioning in Amphibian Communities", June 1973, Society for the Study of Amphibians and Reptiles, Tacoma, WA.
2. "Chemoreception in Snakes", June 1975, American Society of Ichthyologists and Herpetologists, Williamsburg, VA.
3. "The Ecology of Garter Snakes", June 1976, American Society of Ichthyologists and Herpetologists, Fairbanks, AK.

4. "The Reproductive Biology of Amphibians", August 1976, Society for the Study of Amphibians and Reptiles, Oxford, OH.
5. "Individual Variation", March 1978, Midwestern Regional Meeting of the Animal Behavior Society, Purdue, IN.
6. "Mechanisms of Foraging Behavior", June 1978, Animal Behavior Society, Seattle, WA.
7. Midwest Conference on Population Biology, 1979 Urbana, IL.
8. "Evolutionary Determinants of Feeding Behavior", Winter Animal Behavior Conference II, January 1980, Steamboat Springs, CO.
9. Second Midwest Conference on Population Biology, September 1980, Purdue, IN.
10. "Biochemical Aspects of Evolutionary Biology, Spring, 1981, Field Museum of Natural History, Chicago, IL.
11. "Mate Choice", Spring 1981, Cambridge University, Cambridge, UK.
12. "Adaptive Radiation within a Highly Specialized System: the Diversity of Feeding Mechanisms of Snakes", December 1981, American Society of Zoologists, Dallas, TX.
13. "Persistent Controversies in Evolutionary Theory", March 1982, Morris Fishbein Center for History of Science and Medicine, University of Chicago, Chicago, IL.
14. The Highlands Conference on Plethodontid Salamanders, August 1982, Highlands Biological Station, Highlands, NC (with L. D. Houck).
15. "Quantitative Genetics and Behavioral Evolution", January 1986, Winter Animal Behavior Conference, Park City, UT.
16. "New Directions in Ecological Physiology", May 1986, National Science Foundation, Washington D.C.
17. "Snake Ecology", June 1986, ASIH, Victoria, BC.
18. "Sexual Selection: Testing the Alternatives", August 1986 Dahlem Conference, Berlin, W. Germany.
19. "Developmental Behavior Genetics", November 1986, William Paterson College of New Jersey, NJ.
20. "Energetics and Animal Behavior", December 1986, American Society of Zoologists, Nashville, TN.
21. "Quantitative Genetics and Evolution", May-June 1987, 2nd International Conference on Quantitative Genetics, Raleigh, NC.
22. "Evolution and Behavior", August 1987, Plenary Lecture, International Ethological Conference XX, Madison WI.
23. "Dynamics of Size (Age) Structured Populations", October 1987 University of Lund, Sweden.
24. "Studies of Quantitative Genetics in Natural Populations", August 1988 XXIth International Congress of Genetics, Toronto, ON.
25. "Complex Organismal Functions: Integration and Evolution in Vertebrates", Aug.-Sept. 1988, Dahlem Conference, Berlin, W. Germany.
26. "Genetical Behavioral Ecology", October 1988 2nd International Conference on Behavioral Ecology, Vancouver, BC.
27. "Plasticity and Life History", June 1989, American Society of Ichthyologists and Herpetologists, San Francisco, CA.
28. "Ecology and Behavior of Snakes", September 1989 First World Congress of Herpetology, Canterbury, UK.
29. "Population Viability Analysis and Management", October 1989 National Zoological Park, Front Royal, VA.

30. "Fitness, Selection and Evolution in Species with Parental Care", Jan. 1990, Winter Animal Behavior Conference, Park City, UT.
31. "Behavioral Genetics", June 1990, Animal Behavior Society, Binghamton, NY.
32. "Evolution: From Molecules to Culture", September 1990, Cold Spring Harbor Laboratory, NY.
33. "Islands of the Indian Ocean", March 1991, guest lecturer on Univ. Chicago alumni cruise.
34. "Author R.N. Brandon Meets Critics", April 1991, American Philosophical Assoc., Chicago, IL.
35. "Evolution of Behavioral Phenotypes: Perspectives from the Study of Geographic Variation," June 1991, Animal Behavior Society, Wilmington, NC (with P. Verrell and S.G. Tilley).
36. "Behavioral Mechanisms in Evolutionary Ecology," August 1991, American Society of Naturalists, Hilo, HI.
37. "Speciation and Geographic Variation," May 1992, Plethodontid Salamander Conference, Highlands, NC.
38. "Comparative Quantitative Genetics: A Case Study with Garter Snakes," June 1992, Distinguished Herpetologist Lecture, Herpetologist's League, Champaign-Urbana, IL.
39. "Sexual Selection in Plants and Animals", June 1993, American Society of Naturalists, Snowbird, UT.
40. "Sexual Selection", January 1994, Second World Congress of Herpetology, Adelaide, Australia.
41. "Splendors of New Zealand", April 1994, guest lecturer on Univ. Chicago alumni cruise, NZ.
42. "Evolutionary Biology: A Science Matures", February 1995, AAAS, Atlanta, GA.
43. Fellows Lecture, "Behavioral Variation in Natural Populations", July 1995, Animal Behavior Society, Lincoln, NB.
44. The Ecology and Evolution of Mating Systems, March 1996, York University, Toronto, ON.
45. President's Workshop, February 1998, Gravitational Biology & Ecology, NASA, Ames, CA.
46. Presidential Lecture, "The Bridge Between Micro- and Macroevolution: a Tour of the Construction Site", Society for the Study of Evolution, June 1998, Vancouver, BC.
47. Eminent Biologist Lecture Series, Pittsburgh EcoForum, October 1998, Pittsburgh, PA.
48. NASA Evolutionary Biology Conference, March 1999, American Museum of Natural History, New York, NY.
49. Workshop on Teaching Evolution, Society for the Study of Evolution, June 1999, Madison, WI
50. Snake Ecology Group Meeting, Keynote Address, September 2000, Ozark Natural Science Center, AR.
51. SICB Symposium on "Selection and Evolution of Performance in Nature", Keynote Address, January 2003, Toronto, ON.
53. Donald W. Tinkle Memorial Lecture, Museum of Zoology, University of Michigan, Ann Arbor, MI, 2003

54. Kellogg Biological Station, Michigan State University, Eminent Ecologist Lecture Series, Kellogg, MI, 2003.
55. “Genes and Behavior”, Gordon Conference, February 2006, Ventura, CA.
56. NOAA Salmon Fishery & Evolution Symposium/Workshop, “Evolutionary Change and Salmon”, December 2006, Seattle, WA.
57. Wenner-Gren/Swedish Royal Academy of Science Symposium on “Mating Systems Evolution”, June 2007, Kristineberg, Sweden.
58. Norwegian Academy of Science & Letters sponsored workshop on “Measuring Evolution”, October 2008, Oslo, Norway.
59. Workshop on “Evolution and Architecture of Genetic Systems”, Erwin Schrödinger International Institute for Mathematical Physics, July 2009, Vienna, Austria.
60. Symposium on “The Phenotype-Fitness Map Re-visited: Agents of Selection and the Importance of Ecology in Evolutionary Studies”, European Society for Evolutionary Biology, August 2009, Torino, Italy.
61. Plenary Lecture, Evo-WIBO, April 2010, Port Townsend, WA
62. Workshop on “The Future of Evolutionary Biology”, sponsored by the Society for the Study of Evolution, the Society for Systematic Biology, and the American Society of Naturalists; June 2011, Norman, OK.
63. NESCent Course, “Evolutionary Quantitative Genetics Workshop”; Co-organizer with Joseph Felsenstein; 8-13 August 2011, Durham, NC.
64. American Society of Naturalists Presidential Address, “Phenotypic evolution: the emergence of a new synthesis”, First Joint Congress on Evolutionary Biology, July 2012, Ottawa, Canada.
65. NESCent Course, “Evolutionary Quantitative Genetics Workshop”; Co-organizer with Joseph Felsenstein; 6-11 August 2012, Durham, NC.
66. OPUS Principal Investigator Symposium, National Science Foundation, September 2012, Arlington, VA.
67. NESCent Course, “Evolutionary Quantitative Genetics Workshop”; Co-organizer with Joseph Felsenstein; 5-10 August 2013, Durham, NC.
68. NIMBioS Tutorial, “Evolutionary Quantitative Genetics”; Co-organizer with Joseph Felsenstein; 4-9 August 2013, Knoxville, TN.

## **GRADUATE STUDENTS AND POSTDOCS**

### **Masters Students:**

Douglas J. DeGross, 2004, USGS Forest and Rangeland Ecosystem Science Center, Corvallis, OR

Jerod R. Sapp, 2002, [PISCO](#), Department of Zoology, Oregon State University.

[Andrew J. Crawford](#), 1997, Assoc. Prof, Dept. Biological Science, Univ. Andes, Bogota, Colombia.

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