

CURRICULUM VITAE

Ronny Clifford Woodruff

PRESENT ADDRESS: Department of Biological Sciences
Bowling Green State University
Bowling Green, OH 43403
(419) 372-0376
rwoodru@bgsu.edu

PERSONAL DATA: Born: March 12, 1943, Greenville, Texas
Daughters: Elizabeth Anne Johnson and Marya Woodruff Ochs

EDUCATION:

B.S. 1966, East Texas State University, Commerce, TX
Double major: biology and English
M.S. 1967; East Texas State University, Commerce, TX
Major: zoology. Minors: English and education
Ph.D. 1972, Utah State University, Logan, UT
Degree in zoology (emphasis in genetics)

POSTDOCTORAL FELLOWSHIPS:

NIH Postdoctoral Fellow, 1971-73, Department of Zoology, University of Texas at Austin, Austin, TX. Advisor: Burke H. Judd.
Senior Assistant in Research, 1974-August 1976, Department of Genetics, University of Cambridge, Cambridge, England (funded by Medical Research Council; M. Ashburner, PI)
Visiting Research Associate, August 1976-August 1977, Department of Zoology, University of Oklahoma, Norman, OK (funded by NIH; Co-PI with J.N. Thompson, jr.)

POSTS HELD:

Assistant Professor (part time), 1973-74, Department of Zoology, University of Texas at Austin, TX
Assistant Professor and Director, Mid-America Drosophila Stock Center, September 1977-1980, Department of Biological Sciences, Bowling Green State University, Bowling Green, OH
Associate Professor and Director, Mid-America Drosophila Stock Center, 1980-1985, Department of Biological Sciences, BGSU, Bowling Green, OH
Professor and Director, Mid-America Drosophila Stock Center, 1985-1992, Department of Biological Sciences, BGSU, Bowling Green, OH
Chair and Professor, Director, Mid-America Drosophila Stock Center, January 1993-1994, Department of Biological Sciences, BGSU, Bowling Green, OH
Chair and Distinguished Research Professor; Director, Mid-America Drosophila Stock Center, August, 1994-August, 1996, Dept. Biological Sciences, BGSU, Bowling Green, OH
Distinguished Research Professor; Director, Mid-America Drosophila Stock Center, September, 1996-1998, Department of Biological Sciences, BGSU, Bowling Green, OH
Distinguished Research Professor, 1994-present, Dept. Biol. Sci., BGSU, Bowling Green, OH

VISITING PROFESSOR:

Visiting Professor, University of Oklahoma Biological Station, Molecular Techniques for Field Biology, team-taught with Dr. James N. Thompson, jr., summers, 1990-2016.

AFFILIATE RESEARCH PROFESSOR:

University of Oklahoma Biological Station, 2007-present.

CO EDITOR-IN-CHIEF: *GENETICA*:

1998 to 2016

FELLOWSHIPS:

National Defense Education Act, Title IV, Graduate Fellowship, 1967-70

U.S. Public Health Service, NIH Genetics Training Grant, PHS-1029, 1970-71

U.S. Public Health Service, NIH Training Grant No. HD-00268 from the National Institute of Child Health and Human Development, 1971-73

University of New England (Armidale, Australia), Visiting Research Fellowship, May-Aug, 1991

HONORS AND AWARDS:

Fellow of Trinity Hall College, University of Cambridge, 1974-76.

Research Career Development Award, NIH, NIEHS, K04-ES00087, 1980-85.

Sigma Xi Outstanding Young Scientist Award, 1981.

Fulbright Research Award, 1988, Kenya.

Distinguished Research Professor, 1994-present.

Member, Non-Advocate Review Panel, NASA, March 2005.

Member, NSF Proposal Review Panel for Molecular & Cellular Biosciences, Eukaryotic Genetics, 2005-2007

Elliott Blinn Award for Faculty-Undergraduate Student Innovative Basic Research/Creative Work, 2010

Fellow of American Association for the Advancement of Science (AAAS), 2010.

TRAVEL GRANTS:

1978, Genetics Society of America, XIV International Congress Genetics, Moscow, U.S.S.R.

1981, Environmental Mutagen Society, III International Conference on Environmental Mutagens, Tokyo, Japan

1983, Genetics Society of America, XV International Congress of Genetics, New Delhi, India

1985, Environmental Mutagen Society, IV International Conference on Environmental Mutagens, Stockholm, Sweden

COMMITTEES:

Environmental Protection Agency "Gene-Tox" Committee on Chromosome Breakage in *Drosophila*. 1980-83.

Chair of Subcommittee on Insects for the Genetics Society of America Committee on the Preservation of Germplasm, 1984-1986.

Committee on Standards for *Drosophila* Mutagenesis Assays sanctioned by the American Society for Testing and Materials (ASTM), 1984-85.

Commission on Food, Environment and Renewable Resources (CFERR) of the National Association of State Universities and Land-Grant Colleges, 1993-present.

Ohio Biological Survey Institution Representative, 1993-1996.

Genetic Stock Committee, Genetics Society of America, 1986-1998.

Drosophila Board, Genetics Society of America, 1993-1998.

Drosophila Information Service Advisory Board, 1993-present.

EDITORIAL BOARD:

Mutation Research, 1985-1990

Environmental and Molecular Mutagenesis, 1995-1998

Journal of Heredity, Associate Editor, 2002-2007

WORKSHOPS ATTENDED:

New England Biolabs' Workshop in Molecular Biology and Technology, August, 1986, Smith College.

Fish Mitochondrial DNA Workshop, April 10-14, 1989, University of Windsor.

Drosophila Database Workshop, Dec. 6-7, 1990. The National Center for Human Genome Research, Bethesda, Maryland.

Council of Biological Editors, Short Course for Journal Editors, April 30-May 1, 1998, Salt Lake City, Utah.

Genetics Tutor Workshop, Carnegie Mellon University, Pittsburg, PA, July 11-13, 2007.

GORDON CONFERENCE:

Biology of Aging, Oxford, England, July 22-27, 2001

GRANTS AND CONTRACTS:

A. Federally Funded:

DHEW-NIEHS grant 5-R01-ES01439, August 1976-August 1977 (PI, J.N. Thompson)

National Science Foundation, DEB-75-15090, September 1977-80, Maintenance of the Mid-America *Drosophila* Stock Center, \$242,870 (PI)

National Science Foundation, BMS-7515090, September 1980-85, (Mid-America *Drosophila* Stock Center), \$425,000 (PI)

DHEW-NIEHS 5-R01-ES01439-03, 1978-79, \$12,000, subcontract (co-investigator with J.N. Thompson), "Frequencies of mutator factors in natural populations"

DHEW-NIEHS N01-ES-0016, 1979-83, \$611,184, "*Drosophila* Mutagenesis Testing" (PI)

NSF Grant, DEB-7923007, 1980-82, \$60,914, "Mutator activity and the genetic structure of natural populations" (PI)

NIH, K04-ES00087, "Influence of Mutators on Genetics and Development" (Research Career Development Award), 1980-1985, \$189,802 (PI)

North Atlantic Treaty Organization Research Grant, 1980, \$4,515 (with M. Ashburner and J.N. Thompson), "Analysis of the distribution of cloned middle repeat DNA sequences in male recombination strains of *Drosophila*"

NSF, BSR-8117063. "Genetic Control of Spontaneous Mutation," 1982-86. \$121,345, (PI)

American Cyanamid, 1982, \$7,571, "Mutagenesis Assay of Chemical," (PI)

NSF, BSR-8420293, 1985-1990, \$535,000, "Maintenance of a *Drosophila* Stock Center," (PI)

Fulbright Research Award, 1988, #87-47122, "Transposable DNA elements in African populations of *Drosophila*", \$15,180 (PI)

NIH, RFQ #1P27008, Chlorambucil-induced APRT Mutants, 1990-1991, \$24,416 (PI).

NSF, DIR-9001490, 1990-1991, \$160,000, "Maintenance of a *D. melanogaster* Stock Center" (PI)

NIH, 1-R01-LM04933-01, 1990-1991, \$40,529, "Publication of a *Drosophila* Genetic Stock List" (PI)

NSF, DIR-9104003, 1991-1996, \$808,498, "Maintenance of a *D. melanogaster* Stock Center" (PI)

NIH, R55-GM49362-01, 1993-1994, \$50,000 total, \$24,670 BGSU, "*Drosophila* mobile elements in natural populations." (Co-PI with I. A. Boussy.

NIH, R01 GM49362-01A1, 1994-1998, \$679,488 total, \$213,872 BGSU, "*Drosophila* mobile

elements in natural populations," Co-PI with I. A. Boussy.
NSF, DBI-9601996, 1996-1998, \$288,000, "Maintenance of a *D. melanogaster* Stock Center" (PI)
NASA, NAG 2-1427, 09/01/2000-08/31/2003, \$789,965 (\$412,800 to Co-I, RCW, by subcontract); "Effect of hypergravity, vibration, and radiation on genetic and developmental stability in *D. melanogaster*". Co-I with Dr. James N. Thompson, jr.
NASA, NCC 2-1355, 08/01/2002 to 01/31/2005, \$242,999 (\$158,742 to Co-I, RCW, by subcontract); "Genetic and developmental stability in response to long-term exposure of *Drosophila melanogaster* to a Space Station environment". Co-Investigator with Dr. James N. Thompson, jr.
NASA, NCC 2-1355, extension, 4-01-2005 to 3-31-2006, \$96,604 to Co-I, RCW, by subcontract to University of Oklahoma, "Effect of hypergravity, vibration, and radiation on genetic and developmental stability in *D. melanogaster*". Co-I with Dr. James N. Thompson, jr.

B. Bowling Green State University Funded:

Faculty Research Council Grant (Bowling Green State Univ.), June-Sept 1978, \$1,292.
Faculty Research Council Grant (BGSU), June-September, 1979, \$1,415.
Biomedical Research Support Grant Award #8109, 1980, BGSU, \$3,000, "Analysis of the distribution of cloned middle repeat DNA sequences in mutator lines of *Drosophila*"
Biomedical Research Support Grant Award #8307, 1982, BGSU, \$2,000, "In situ hybridization of cloned DNA to polytene chromosome and chromosome breakage analysis"
Biomedical Research Support Grant #8403, 1983, BGSU, \$1,100, "Non-radioactive DNA labeling by incorporation of biotinylated nucleotides into genetic material."
Biomedical Research Support Grant #84-505, 1984, BGSU, \$1,218, "Southern blot analysis of DNA insertion events in *Drosophila*."
Research Challenge Award, BGSU, 1986, 210134/00322, "Genetics of transposable DNA elements in *Drosophila*", \$7,600.
Faculty Research Committee Basic Grant Award, 1988, BGSU, \$3,000, "Transposable DNA elements in African populations of *Drosophila*."
Ohio Board of Reagents Research Challenge Award, 1990, BGSU, \$10,000, "Sterilizer for Mid-America *Drosophila* Stock Center."
Faculty Research Committee Basic Grant Award, 1991, BGSU, \$3,000, "The role of transposable DNA elements in altering natural population genetic structure and life-history traits."
SPAR, 1996, BGSU, \$2,000, "Travel funds to support *Drosophila* collection trip to Australia".
SPAR, Faculty Research Committee (FRC), Research Incentive Grant (RIG), \$7,154, June 6, 2009. "Synergistic Interactions of Deleterious Mutations".
CURS (Center for Undergraduate Research and Scholarship). Numerous awards.

FIELDS OF RESEARCH:

Evolutionary genetics, population genetics, mutagenesis, genetics and molecular biology of transposable DNA elements, molecular evolution, aging, and the role of mutations in evolution.

TEACHING EXPERIENCE:

General Genetics
Developmental Genetics
Molecular Techniques for Field Biology (Univ. Oklahoma Biological Station - Summers, 1990-2015)
Evolution (traditional and televised courses)
Molecular Evolution

Speciation
Population and Conservation Genetics
Laboratory in Genetics
Mutagenesis
Drosophila Genetics

PROFESSIONAL SOCIETIES:

The Genetics Society of America

PUBLICATIONS (PAPERS) (* = Invited Articles):

1. Woodruff, R.C., J.T. Bowman and J.R. Simmons. 1972. Sex influenced reversion of the mutationally unstable mutant forked-3N of *Drosophila melanogaster*. *Mutation Res.* 15:86-89.
2. Fullilove, S.L. and R.C. Woodruff. 1974. Genetic, cytological and ultrastructural characterization of a temperature-sensitive lethal in *Drosophila melanogaster*. *Developmental Biology* 38:291-307.
3. Woodruff, R.C. and Rita M. Gander. 1975. The induction of temperature-sensitive mutations in *Drosophila melanogaster* by the acridine mustard ICR-170. *Mutation Research* 25:337-345.
4. Woodruff, R.C. 1975. The control of mutational instability by a new mutator gene of *Drosophila melanogaster*. *Genetical Research* 25:163-177.
5. Sochacka, J.H.M. and R.C. Woodruff. 1976. Induction of male recombination in *Drosophila melanogaster* by injection of extracts of flies showing male recombination. *Nature* 262:287-289.
6. Woodruff, R.C. and J. Bortolozzi. 1976. Spontaneous recombination in males of *Drosophila simulans*. *Heredity* 37:295-298.
7. Woodruff, R.C. and J.N. Thompson, Jr. 1977. An analysis of spontaneous recombination in *D. melanogaster*: Isolation and characterization of male recombination lines. *Heredity* 38:291-307.
8. Thompson, J.N., Jr., M. Ashburner and R.C. Woodruff. 1977. A presumptive control mutation for alcohol dehydrogenase in *Drosophila melanogaster*. *Nature* 270:363.
9. Woodruff, R.C., B. Slatko and J.N. Thompson, Jr. 1978. A lack of interchromosomal effect associated with spontaneous recombination in males of *Drosophila melanogaster*. *Ohio J. Sci.* 78:310-317.
10. Woodruff, R.C. and M. Ashburner. 1978. The frequency of X-ray induced chromosome breakage in the sibling species *Drosophila melanogaster* and *Drosophila simulans*. *The American Naturalist* 112:456-459.
11. Henderson, S.A., R.C. Woodruff and J.N. Thompson, Jr. 1978. Spontaneous chromosome breakage at male meiosis associated with male recombination in *D. melanogaster*. *Genetics* 88:93-107.
12. Hellack, J.J., J.N. Thompson, Jr., R.C. Woodruff and B.N. Hisey. 1978. Male recombination and mosaics induced in *Drosophila melanogaster*. *Experientia* 34:447.
13. Thompson, J.N., Jr. and R.C. Woodruff. 1978. Chromosome breakage: A possible mechanism for diverse genetic events in outbred populations. *Heredity* 40:153-157.
14. Thompson, J.N., Jr. and R.C. Woodruff. 1978. Mutator genes--Pacemakers of evolution. *Nature* 274:317-321.
- *15. Thompson, J.N., Jr., R.C. Woodruff and G. Bradley Schaefer. 1978. An assay of somatic recombination in male recombination lines of *Drosophila melanogaster*. *Genetica* 49:77-80.
16. Thompson, J.N., Jr., R.C. Woodruff and B.N. Hisey. 1979. Morphological differences between the females of *Drosophila melanogaster* and *D. simulans*. *South West Naturalist* 24:204-205.
17. Hisey, B.H., J.N. Thompson, Jr. and R.C. Woodruff. 1979. Position effect influencing alcohol dehydrogenase activity in *Drosophila melanogaster*. *Experientia* 35:591-592.

18. Woodruff, R.C. and M. Ashburner. 1979. The genetics of a small autosomal region of *Drosophila melanogaster*, including the structural gene for alcohol dehydrogenase. I. Characterization of deficiencies and mapping of *Adh* and visible mutations. *Genetics* 92:117-132.
19. Woodruff, R.C. and M. Ashburner. 1979. The genetics of a small autosomal region of *Drosophila melanogaster*, including the structural gene for alcohol dehydrogenase. II. Lethal mutations in the region. *Genetics* 92:133-149.
20. Woodruff, R.C., J.N. Thompson, Jr. and R.F. Lyman. 1979. Intraspecific hybridization and the release of mutator activity. *Nature* 278:277-279.
- *21. Ashburner, M., R. Camfield, B. Clarke, D. Thatcher and R.C. Woodruff. 1979. A genetic analysis of the locus coding for alcohol dehydrogenase, and its adjacent chromosome region, in *Drosophila melanogaster*. In: *Eukaryotic Gene Regulation*, R. Axel, T. Maniatis, C.F. Fox, Eds. Academic Press, New York.
- *22. Woodruff, R.C. and J.N. Thompson, Jr. 1980. Hybrid release of mutator activity and the genetic structure of natural populations. *Evolutionary Biology*, Vol. 12, M.K. Hecht, W.C. Steere and B. Wallace, Eds., Plenum Pub. Co., NY, pp. 129-162.
23. Thompson, J.N., Jr. and R.C. Woodruff. 1980. Increased mutation in crosses between geographically separated strains of *D. melanogaster*. *Proc. Natl. Acad. Sci. USA* 77:1059-1062.
24. Thompson, J.N., Jr., S.A. Henderson, and R.C. Woodruff. 1980. Sterility and testis structure in hybrids involving male recombination lines of *Drosophila melanogaster*. *Genetica* 51:221-226.
25. Woodruff, R.C. and R.F. Lyman. 1980. Segregation distortion and male recombination in natural populations of *Drosophila melanogaster*. *Amer. Nat.* 116:297-304.
26. Woodruff, R.C., R. Valencia, R.F. Lyman, B.A. Earle and J.T. Boyce. 1980. The mutagenic effect of platinum compounds in *Drosophila melanogaster*. *Environ. Mutagenesis* 2:133-138.
27. Thompson, J.N. and R.C. Woodruff. 1981. A model for spontaneous mutation in *Drosophila* caused by transposing elements. *Heredity* 47:327-335.
28. Woodruff, R.C. and J.N. Thompson, Jr. 1982. Genetic factors that affect rates of spontaneous mutation and chromosome aberrations in *Drosophila melanogaster*. *Cytogenetics and Cell Genetics* 33:152-159.
29. Ashburner, M., S. Tsubota and R.C. Woodruff. 1982. The genetics of a small autosomal region of *Drosophila melanogaster* containing the structural gene for alcohol dehydrogenase. IV: Scutoid, an antimorph mutation. *Genetics* 102:401-420.
30. Thompson, J.N., Jr. & R.C. Woodruff. 1982. Polygenic analysis of pattern formation: Interdependence among veins in the same compartment of the *Drosophila* wing. *Genetica* 60:71-76.
- *31. Woodruff, R.C., B.E. Slatko and J.N. Thompson, Jr. 1983. Factors affecting mutation rates in natural populations. *The Genetics and Biology of Drosophila*, Vol. 3C, pp. 37-124. M. Ashburner, H.L. Carson and J.N. Thompson, Jr., Eds. Academic Press.
32. Woodruff, R.C. and R.K. Brodberg. 1983. Comparison of mating schemes for screens of chemical induced heritable translocations in *Drosophila melanogaster*. *Mutat. Res.* 119:293-297.
33. St. John, Ralph C., Nancy Shafer and R.C. Woodruff. 1983. A computer analysis of the statistical significance of mutation rates. *Journal of Heredity.* 74:85-87.
34. Brodberg, R.K., R.F. Lyman and R.C. Woodruff. 1983. The induction of chromosome aberrations by cis-platinum(II)diamminodichloride in *D. melanogaster*. *Environmental Mut* 5:285-297.
35. Ashburner, M., C. Detwiler, S. Tsubota and R.C. Woodruff. 1983. The genetics of a small autosomal region of *Drosophila melanogaster* containing the structural gene for alcohol dehydrogenase. VI. Induced revertants of scutoid. *Genetics* 104:405-431.
36. Woodruff, R.C., J.P. Phillips and D. Irwin. 1983. Pesticide induced complete and partial chromosome loss in screens with repair-defective females of *Drosophila melanogaster*. *Environmental Mutagenesis* 5:835-846.

37. Woodruff, R.C., J.M. Mason, R. Valencia and S. Zimmering. 1984. Chemical mutagenesis testing in *Drosophila*: I. Comparison of positive and negative control data for sex-linked recessive lethal mutations and reciprocal translocations in three laboratories. *Environmental Mutagen.* 6:189-202.
38. Slatko, B.E., J.M. Mason and R.C. Woodruff. 1984. The DNA transposition system of hybrid dysgenesis in *Drosophila melanogaster* can function despite defects in host DNA repair. *Genetical Research* 43:159-171.
- *39. Valencia, R. (Leader), S. Abrahamson, W.R. Lee, E.S. Von Halle, R.C. Woodruff, F.E. Wurgler and S. Zimmering. 1984. Chromosome mutation tests for mutagenesis in *D. melanogaster*: A report of the U.S. Environmental Protection Agency Gene-Tox Program. *Mutation Research* 134:61-88.
40. Woodruff, R.C., J.N. Thompson, Jr., M.A. Seeger and W.E. Spivey. 1984. Variation in spontaneous mutation and repair in natural population lines of *Drosophila melanogaster*. *Heredity* 53:223-234.
41. Blount, J.L., R.C. Woodruff and S.J. Hudson. 1985. Interaction between mobile DNA element induced lethal mutations and chemical mutagens in the hybrid dysgenic system of *Drosophila melanogaster*. *Mutation Research*, 149:33-40.
42. Zimmering, S., J.M. Mason, R. Valencia and R.C. Woodruff. 1985. Chemical mutagenesis testing in *Drosophila*. II. Results of 20 coded compounds tested for the National Toxicology Program. *Environmental Mutagenesis* 7:87-100.
43. Valencia, R., J.M. Mason, R.C. Woodruff and S. Zimmering. 1985. Chemical mutagenesis testing in *Drosophila*. III. Results of 48 coded compounds tested for the National Toxicology Program, *Environmental Mutagenesis* 7: 325-348.
44. Yoon, J.S., J.M. Mason, R. Valencia, R.C. Woodruff and S. Zimmering. 1985. Chemical mutagenesis testing in *Drosophila*. IV. Results of 45 coded compounds tested for the National Toxicology Program, *Environmental Mutagenesis* 7: 349-367.
45. Mason, J.M., R. Valencia, R.C. Woodruff, and S. Zimmering. 1985. Genetic drift and seasonal variation in spontaneous mutation frequencies in *Drosophila*. *Environ. Mutagenesis* 7: 663-676.
46. Woodruff, R.C., J.M. Mason, R. Valencia, and S. Zimmering. 1985. Chemical mutagenesis testing in *Drosophila*. V. Results of 53 coded compounds tested for the National Toxicology Program. *Environmental Mutagenesis* 7: 677-702.
- *47. Blount, J.L. and R.C. Woodruff. 1986. Comparison of *Drosophila melanogaster* chromosome breakage assays, including an evaluation of the hyperploidy test, In: *Genetic Toxicology of Environmental Chemicals, Part B: Genetic Effects and Applied Mutagenesis*, Eds. C. Ramel, B. Lambert and J. Magnusson, pp. 427-434, Alan R. Liss, Inc., New York.
48. Brodberg, R.K., M.J. Mitchell, S.L. Smith and R.C. Woodruff. 1987. Specific reduction of N,N-dimethylnitrosamine mutagenicity in *Drosophila melanogaster* by dimethyl sulfoxide. *Environmental and Molecular Mutagenesis* 10: 425-432.
49. Woodruff, R.C., M.A. Seeger and E.S. Norris. 1987. Clusters of premeiotic ring-X chromosome loss are not observed in males of *Drosophila melanogaster*. *Mutation Research* 191: 145-149.
50. Mason, J.M., C.S. Aaron, W.R. Lee, P.D. Smith, A. Thakar, R. Valencia, R.C. Woodruff, F.E. Wurgler and S. Zimmering. 1987. A guide for performing germ cell mutagenesis assays using *Drosophila melanogaster*. *Mutation Research* 189: 93-102.
51. Woodruff, R.C., J.L. Blount and J.N. Thompson, Jr. 1987. Hybrid dysgenesis in *D. melanogaster* is not a general release mechanism for DNA transpositions. *Science* 237: 1206-1208.
52. Woodruff, R.C., J.N. Thompson, Jr., A.A. Szekely and J.S. Gunn. 1987. Characterization of *Drosophila* lines for transposable elements by Southern blot analysis with biotinylated-DNA probes. *Drosophila Information Service* 66: 171-177.
53. Gunn, J.S., R.C. Woodruff and R.L. Ludwiczak. 1989. The effect of temperature on the movement of P DNA elements in somatic tissues of *D. melanogaster*. *Mutation Research*, 226: 267-272.
- *54. Woodruff, R.C., J.N. Thompson, Jr., H.N.B. Gopalan, W.A. Ngunjiri, E.S. Norris and A.A. Szekely. 1990. Genetic and molecular analyses of P DNA elements sampled from natural populations of

- Drosophila melanogaster* in Kenya. Molecular Evolution, UCLA Symposia on Molecular and Cellular Biology, New Series, Volume 122, Eds. M.T. Clegg and S.J. O'Brien, pp. 117-125.
55. Takada, H., R.C. Woodruff and J.N. Thompson, Jr. 1991. Collections of Drosophilidae in Kenya, with description of a new species of *Dettopsomyia*. Entomological News 101: 246-255.
 56. Woodruff, R.C. and M.A. Seeger. 1991. Test of a semiselective screen for induced aneuploidy in germ cells of *Drosophila melanogaster* females with structurally normal chromosomes. Mutation Research 252: 61-82.
 57. Jakubczak, J.L., M.K. Zenni, T.H. Eickbush and R.C. Woodruff. 1992. Turnover of R1 (Type I) and R2 (Type II) retrotransposable elements in the ribosomal DNA of *Drosophila melanogaster*. Genetics 131: 129-142.
 58. Norris, E.S. and R. C. Woodruff. 1992. Visible mutations induced by P-M hybrid dysgenesis in *D. melanogaster* result predominantly from P element insertions. Mutation Research 269: 63-72.
 59. Woodruff, R.C. and J.N. Thompson, Jr. 1992. Have premeiotic clusters of mutation been overlooked in evolutionary theory? J. Evolutionary Biology 5: 457-464.
 - *60. Woodruff, R.C. Transposable DNA elements and life history traits. 1992. I. Transpositions of P DNA elements in somatic cells reduces the lifespan of *Drosophila melanogaster*. Genetica 86: 143-154. (also as reference number 61, including a discussion)
 - *61. Woodruff, R.C. 1993. Transposable DNA elements and life history traits. I. Transpositions of P DNA elements in somatic cells reduces the lifespan of *Drosophila melanogaster*. In: Transposable Elements and Evolution. Ed. J.F. McDonald, Kluwer Academic Publishers, The Netherlands, pp. 218-229. (also as reference number 60 without the discussion)
 62. Lyman, R.F. and R.C. Woodruff. 1993. No evidence of an impact of interspecific hybridization on mutation rates in species of the *melanogaster* subgroup of *Drosophila*. Life Sciences Advances - Genetics 12:107-113.
 63. Szekely, A.A., R.C. Woodruff and R. Mahendran. 1994. P element-mediated germ line transformation of *Drosophila melanogaster* with *TC1* transposable DNA element from *Caenorhabditis elegans*. Genome 37: 356-366.
 - *64. Woodruff, R.C. and A.G. Nikitin. 1995. P DNA element movement in somatic cells reduces lifespan in *Drosophila melanogaster*: Evidence in support of the somatic mutation theory of Aging. Mutation Research 338:35-42.
 - *65. Nikitin, A.G. and R.C. Woodruff. 1995. Somatic movement of the *mariner* transposable element and lifespan of *Drosophila* species. Mutation Research 338:43-49.
 66. Merker, R.J. and R.C. Woodruff. 1996. Molecular evidence for discrete breeding stocks of walleye (*Stizostedion vitreum*) in western Lake Erie. J. Great Lakes Research 22(2):280-288.
 67. Woodruff, R.C., H. Huai and J.N. Thompson, Jr. 1996. Clusters of new mutations in the evolutionary landscape. Genetica, 98: 149-160.
 68. Huai, H. and R.C. Woodruff. 1997. Clusters of identical new mutations can account for the "overdispersed" molecular clock. Genetics, 147: 339-348.
 69. Huai, H. and R. C. Woodruff. 1998. With the correct concept of mutation rate, cluster mutations can explain the overdispersed molecular clock. Genetics, 149: 467-469.
 70. Huai, H. and R. C. Woodruff. 1998. Clusters of new identical mutants and the fate of underdominant mutations. Genetica 102/103: 489-505.
 71. Thompson, J. N., Jr., R. C. Woodruff and Haiying Huai. 1998. Mutation rate: A simple concept has become complex. Environmental and Molecular Mutagenesis, 32: 292-300.
 72. Boussy, I. A., M. Itoh, D. Rand and R. C. Woodruff. 1998. Origin and decay of the P element-associated latitudinal cline in Australian *Drosophila melanogaster*. Genetica, 104: 45-57.
 - *73. Arking, R. and R.C. Woodruff. 1999. Using *Drosophila* in Experimental Aging Research. In *Methods in Aging Research*, Ed. B.P. Yu, pp. 145-165, CRC Press, Boca Raton.

- *74. Thompson, J. N., jr. and R. C. Woodruff. 1999. Mutation and Mutagenesis: Overview. In: Encyclopedia of Genetics: Basics and Applications. Ed. J. Knight. Salem Press, Pasadena, Cal. pp. 418-425.
75. Russell, A. L. and R. C. Woodruff. 1999. The genetics and evolution of the *mariner* transposable element in *Drosophila simulans*: Worldwide distribution and experimental population dynamics, *Genetica* 105: 149-164.
76. Itoh, M., R. C. Woodruff, M. A. Leone and I. A. Boussy. 1999. Genomic P elements and P-M characteristics of eastern Australian populations of *Drosophila melanogaster*. *Genetica* 106: 231-245..
77. Woodruff, R.C., J.N. Thompson, jr. J.S.F. Barker and H. Huai. 1999. Transposable DNA elements and life history traits. II. Transposition of P DNA elements in somatic cells reduces fitness, mating activity, and locomotion of *Drosophila melanogaster*, *Genetica*, Special Issue on: Transposable Elements and Evolution, Editor, J.F. McDonald. *Genetica* 107: 261-269.
78. Haller, B. S. and R. C. Woodruff. 2000. Varied expression of a Y-linked P[w] insert due to chromosomal imprinting in *Drosophila melanogaster*. *Genome* 43: 285-292.
- *79 Woodruff, R. C. and J. N. Thompson, jr. 2002. Mutation and premating isolation. *Genetica* 116: 371-382.
- *80. Woodruff, R. C. and James N. Thompson, jr. 2003. Transposons as natural and experimental mutagens. In: Encyclopedia of Life Sciences. London: Nature Publishing Group.<http://www.els.net>.
81. Woodruff, R. C. and J. N. Thompson, jr. 2003. The role of somatic and germline mutations in aging and a mutation interaction model of aging. *Journal of Anti-Aging Medicine* 6:29-39.
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83. Woodruff, R.C., Thompson, J.N., jr., and Sheng Gu. 2004. Premeiotic clusters of mutation and the cost of natural selection, *Journal of Heredity*, 95: 277-283.
84. Woodruff, R. C., J. P. Phillips and A. J. Hilliker. 2004. Increased spontaneous DNA damage in Cu/Zn superoxide dismutase (SOD1) deficient *Drosophila*. *Genome*, 47:1029-1035.
85. Woodruff, R. C. and J. N. Thompson, jr. 2005. The fundamental theorem of neutral evolution: Rates of substitution and mutation should factor in premeiotic clusters. *Genetica*, 125:333-339.
86. Gong, Yi, J. N. Thompson, jr. and R. C. Woodruff. 2005. Deleterious genomic mutation rate for viability in *Drosophila melanogaster* using concomitant sibling controls. *Biology Letters*, 1:492-495.
87. Gong, Yi, Sheng Gu and R. C. Woodruff. 2005. The influence of premeiotic clusters of mutation on indirect estimations of mutation rate. *Human Heredity*, 60:150-155.
88. Gong, Yi, J. N. Thompson, jr. and R. C. Woodruff. 2006. Effect of deleterious mutations on lifespan in *Drosophila melanogaster*. *Journal of Gerontology: Biological Sciences* 61A: 1246-1252.
89. Azad, P. and R. C. Woodruff. 2006. Mutation and cloning efficiency. *Cloning and Stem Cells*. 8: 237-239.
90. Morgan, Elizabeth and R. C. Woodruff. 2006. A significant increase in the rate of new deleterious mutations following interspecific crowding of *Drosophila melanogaster* by *Drosophila simulans*. *Drosophila Information Service*, 89: 97-101.
91. Ogura, K, R. C. Woodruff, M. Itoh and I.A. Boussy. 2007. Long-term patterns of genomic P element content and P-M characteristics of *D. melanogaster* in eastern Australia. *Genes & Genetic Systems* 82: 479-487.
92. Azad, P. and R. C. Woodruff. 2007. Tolerance adaptation of *Drosophila melanogaster* to increased salt concentration due to new beneficial mutations. *Drosophila Information Service*, 90: 14-20.
93. Woodruff, R. C. and Mingcai Zhang. 2009. Adaptation from leaps in the dark. *Journal of Heredity*. 100:7-10.
94. Azad, P., Mingcai Zhang, and R. C. Woodruff. 2010. Rapid increase in viability due to new beneficial mutations in *Drosophila melanogaster*. *Genetica*. 138: 251- 263.
95. Zhang, Mingai, Priti Azad and R. C. Woodruff. 2011. Adaptation of *Drosophila melanogaster* to

- increased NaCl concentration due to dominant beneficial mutations. *Genetica* 139:177-186.
96. Gontijo, A. M., V. Miguela, M. F. Whiting, R. C. Woodruff and M. Dominguez. 2011. Intron retention in the *Drosophila melanogaster* *Rieske iron sulphur protein* gene generated a new protein. *Nature Communications*. 2:323 doi: 10.1038/ncomms1328 (2011).
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 98. Woodruff, R. C. 2013. An extreme test of mutational meltdown shows mutational firm up instead. *Genetica*. 141:185-188.
 99. Gao, J. J., X. R. Pan, J. Hu, L. Ma, J. M. Wu, Y. L. Shao, S. M. Ai, S. Q. Liu, Sara A. Barton, R. C. Woodruff, Y. P. Zhang and Y. X. Fu. 2014. Pattern of mutation rates in the germline of *Drosophila melanogaster* males from a large-scale mutation screening experiment. *G3: Genes, Genomes, Genetics*: doi:10.1534/g3.114.011056, 4:1503-1513.
 100. Woodruff, R. C., Michael A. Balinski and Juan L. Bouzat. 2015. A perspective on the evolution of germ-cell development and germlinal mosaics of deleterious mutations. *Genetica*, DOI 10.1007/s10709-015-9854-1, 143:563-569.
 101. **Balinski, Michael Allen and R. C. Woodruff. 2017. Differential sexual survival of *Drosophila melanogaster* on copper sulfate. *Genetica*, DOI 10.1007/s10709-017-9951-4, 145: 131-137.
 102. Woodruff, R. C. and Michael A. Balinski. 2018. Increase in viability due to the accumulation of X chromosome mutations in *Drosophila melanogaster* males. *Genetica* 146:323-328.

PUBLICATIONS (Edited Books):

Mutation and Evolution. 1998. Eds. R. C. Woodruff and J. N. Thompson, Jr. In *Contemporary Issues in Genetics and Evolution*. Kluwer Academic Pub., Dordrecht, The Netherlands.

INVITED CONFERENCE, SYMPOSIUM OR WORKSHOP SPEAKER:

- 1979: The Genetics Society of America, Symposium on Factors Influencing Sterility, Mutation and Male Recombination in *Drosophila melanogaster*, University of Alberta, Edmonton, Canada, Aug. 20-22. "The impact of mutators on the genetic structure of populations."
- 1981: Third International Conference on Environmental Mutagens, Tokyo, Symposium on New Methodology and Results in Screening for Environmental Chemical Mutagens, Sept. 21-27. "Genetic factors that affect the spontaneous mutation rate."
- 1981: Symposium on Chromosome Mutations: Their Potential Relevance to the Genetic Risks in Man, Fourth Radiation Biology Center International Symposium, Kyoto, Japan, Sept. 28-29. "Genetic factors that affect rates of spontaneous chromosome aberrations."
- 1984: 25th Annual *Drosophila* Research Conference, Chicago, Illinois, Symposium on P Element Hybrid Dysgenesis. "Higher frequencies of mutation and chromosome breakage in hybrids from crosses between natural population lines."
- 1985: The NSF Cryopreservation Workshop, Charleston, SC, Mar. 31-Apr. 1. "Overview of stock keeping facilities and policies at the Mid-America *Drosophila* Stock Center."
- 1985: Fourth International Conference on Environmental Mutagens, Stockholm, June. "Comparison of *Drosophila melanogaster* chromosome breakage assays, including an evaluation of the hyperploidy test."
- 1989: 30th Annual *Drosophila* Research Conference, Workshop on Strategies for Mutational Analysis Using *Drosophila*, Apr. 26-30, New Orleans, LA. "*Drosophila* techniques for identifying induced aneuploidy."
- 1989: Molecular Evolution: UCLA Symposia on Molecular and Cellular Biology. Lake Thane, CA, Feb. 27-Mar. 6. "Genetic and Molecular analyses of P DNA elements sampled from natural populations of *Drosophila melanogaster* in Kenya."

- 1990: National Center for Human Genome Research: Integrated Drosophila Database, Dec. 6-7. "Stock list database at the Mid-America Drosophila Stock Center."
- 1991: Annual Meeting of the Genetic Society of Australia, Melbourne, Australia, July 7-10. "Lifespan reduction by transposons and premeiotic clusters of mutation."
- 1992: Transposable Elements and Evolution Meeting, University of Georgia, Athens, GA, June 27-28. "Transposable element-mediated somatic mutations."
- 1993: 34th Annual Drosophila Research Conference Workshop on Drosophila DNA Repair/Mutagenesis, "The role of superoxidedismutase and oxygen free radicals in spontaneous mutagenesis in *Drosophila melanogaster*." March 31, San Diego.
- 1993: 23rd Annual Meeting of the European Environmental Mutagen Society, "The role of DNA transpositions in germ and somatic cell mutagenesis in the model system Drosophila." Sept. 27-Oct. 2, Barcelona, Spain.
- 1997: 38 Annual Drosophila Research Conference Workshop on DNA Repair and Mutagenesis, J. N. Thompson, jr. (presenter) and R. C. Woodruff, "Mutation Rate: A simple concept has become complex" April 19, Chicago.
- 1997: 38 Annual Drosophila Research Conference Workshop on Aging, "Evidence for and against the somatic mutation theory of aging" April, 17, Chicago.
- 2001: Gordon Research Conference; Biology of Aging, "The role of somatic and germinal genetic damage in aging: Evidence from transgenic Drosophila lines with null and extra copies of DNA repair genes and with single DNA inserts; and from the accumulation of spontaneous deleterious mutations on the X chromosome. Queen's College, Oxford, July 22-27, 2001
- 2002 American Naturalist Meeting, Banff, Canada, July 12-14, 2002; Symposium on Pre-Mating Isolation, "Mutation and Premating Isolation", R. C. Woodruff (presenter) and J. N. Thompson, jr.
- 2004 45 Annual Drosophila Research Conference, Washington, D.C., March 24-28; Workshop on "Gravity and the Fly", March 27, 2004, J. N. Thompson, jr. (presenter) and R. C. Woodruff.
- 2005 R. C. Woodruff (presenter) and J. N. Thompson, jr. 2005. Deleterious genomic mutation rate in *Drosophila melanogaster* using concomitant sibling controls. 9th Evolutionary Biology Meeting at Marseilles. September 21-14, 2005, Marseilles, France,

OTHER PROFESSIONAL ACTIVITIES

Co-Editor with J. N. Thompson, Jr. of Special Issue of *Genetica* (42 articles) on "Mutation and Evolution" (1998).

Indexer of:

The Genetics and Biology of *Drosophila*. Vols. 1a, 1b, 1c. M. Ashburner and E. Novitski, Eds. Academic Press, NY. 1976.

The Genetics and Biology of *Drosophila*. Vols. 2b, 2c, 2d. M. Ashburner and T.R.F. Wright, Eds. Academic Press, NY. 1978.

The Genetics and Biology of *Drosophila*. Vols. 3a, 3b, 3c, 3d, 3e. M. Ashburner, H.L. Carson and J.N. Thompson, Jr., Eds. Academic Press, NY. 1981, 1982, 1983, 1985, 1986

R. C. Woodruff. The Long Good-Bye, Letter to Discover. October, 1999, p. 18.

Reviewer: United Nation General Assembly, United Nations Scientific Committee on the Effects of Atomic Radiation, Hereditary Effects of Radiation. 2000.

Workshop Population Genetics at the Molecular Level, University of Montreal, March 9-11, 2001.

TEACHING ARTICLES (undergraduate students in italics):



- Woodruff, R. C. and J. N. Thompson, jr. 1997. A teaching exercise combining Mendelian genetics and gene therapy concepts in *Drosophila*. *Drosophila Information Service* 80: 107-108.
- Woodruff, R. C. and J. N. Thompson, jr. 1999. A one-generation assay of induced genetic damage. *Drosophila Information Service*, 82: 140-141.
- Thompson, J. N., jr., R. C. Woodruff, S. B. Gray, G. S. Hendrix and J. J. Hellack. 2000. Cellulose acetate measurement of *Adh* allele frequencies is a simple exercise in population genetics. *Drosophila Information Service* 83: 203-205.
- Woodruff, R. C. and J. N. Thompson, jr. 2001. A one-generation, *white-peach* assay for *mariner* DNA element activity in *Drosophila simulans*. *Drosophila Information Service*, 84: 213-215.
- Gu, Sheng, Yi Gong, Matthew Smith and R. C. Woodruff. 2002. The dominance value of the *Sb* allele in *Drosophila melanogaster*. *Drosophila Information Service*, 85: 143-149.
- Woodruff, R. C. and James N. Thompson, jr. 2002. Use of the *Drosophila melanogaster zeste* screen to identify aneuploidy induced by cold treatment. *Drosophila Information Service*, 85: 149-151.
- Azad, P., R. C. Woodruff and J. N. Thompson, jr. 2004. Deleterious mutations in natural populations of *Drosophila melanogaster*. *Drosophila Information Service*, 86: 165-168.
- Morgan, E., R. C. Woodruff and J. N. Thompson, jr. 2004. The interchromosomal effect on recombination in *Drosophila melanogaster*. *Drosophila Information Service*, 87:115-117.
- Woodruff, R. C. and J. N. Thompson, jr. 2005. Response to selection in the presence and absence of genetic variation in *Drosophila melanogaster*. *Drosophila Information Service*. 88: 139-143.
- Zhang, Mingcai and R. C. Woodruff. 2006. Confirmation of the Bateman's principle: a sexual

- selection exercise. *Drosophila Information Service*. 89: 143-148.
- Thompson, J. N., jr. Clayton N. Hallerman, Jenna J. Hellack and R. C. Woodruff. 2006. Measuring natural selection using alcohol dehydrogenase alleles. *Drosophila Information Service*. 89: 148-149.
- Toth, Cynthia L, Jessica L. Heintzelman and R. C. Woodruff. 2007. Ultraviolet (UV) light induced mutations in *Drosophila melanogaster*. *Drosophila Information Service*. 90: 169-171.
- Robinson, Bethany, Natalie Wiseman and R. C. Woodruff. 2007. Identification of selfish genetic elements in natural populations of *Drosophila melanogaster*. I. P DNA elements. *Drosophila Information Service*. 90: 172-176.
- Onasch, Katherine D. and R. C. Woodruff. 2007. Changes in linkage disequilibrium over time in *Drosophila melanogaster* for two sex-linked loci. *Drosophila Information Service*. 90: 177-186.
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- Onasch, Katherine D. and R. C. Woodruff. 2008. Experimental observation of inbreeding depression and heterosis in *Drosophila melanogaster*. *Drosophila Information Service*. 91: 151-155.
- Onasch, Katherine D., Natalie Wiseman, Bethany Robinson, Mingcai Zhang and R. C. Woodruff. 2008. Experimental observation of overdominance (heterozygous advantage) in *Drosophila melanogaster*. *Drosophila Information Service*. 91: 169-178.
- Thompson, James. N., Jr., Clayton N. Hallman, Christopher C. Challis, Jane T. Ma, Kyley K. Makanani, Anna L. McGahan, Whitney D. Nall, Patience O. Ozor, Sean P. Rogers, Katherine L. Shoush, Jessica L. Turner, Hunter J. Wernick, Dusty M. Wiles, Rachel S. Yi, Tyler W. Kallsen, Michael J. Hesseler, Barbara Safiejko-Mroccka, and R. C. Woodruff. 2008. A classroom test of predictions about Segregation Distorter (SD) activity in *Drosophila*. *Drosophila Information Service*. 91: 183-185.
- Rex, Caitlin M., Sarah J. Rossiter, Amanda C. Lyons and R. C. Woodruff. 2009. Negative synergistic epistasis in *Drosophila melanogaster*. *Drosophila Information Service*. 92: 151-154.
- Benson, J.L., A.M. Boulton, C.W. Coates, A.C. Lyons, S.J. Rossiter and R. C. Woodruff. 2009. Rare male mating advantage in *Drosophila melanogaster*. *Drosophila Information Service*. 92: 155-160.
- Woodruff, R. C. and Katherine D. Onasch. 2009. The identification of hidden genetic variation (recessive visible mutations) in a natural population of *Drosophila melanogaster*. *Drosophila Information Service*. 92: 160-164.
- Boulton, A. M. and R. C. Woodruff. 2010. Experimental observation of underdominance (heterozygous disadvantage) in *Drosophila melanogaster*. *Drosophila Information Service*. 93:245-255.
- Marvin, R. K., C. C. Wagner and R. C. Woodruff. 2010. Confirmation of the Calvin B. Bridges study: Based on nondisjunction, the white gene is located on the X chromosome of *Drosophila melanogaster*. *Drosophila Information Service*. 93:261-266.
- Woodruff, R. C. and A. M. Boulton. 2011. The identification of nearly neutral mutations in *Drosophila melanogaster*: The *bw⁷⁵* and *bw* alleles of Buri. *Drosophila Information Service*. 94: 167-169.
- Woodruff, R. C., R. K. Marvin and C. C. Wagner. 2011. Inbreeding depression, loss of genetic variation, and survival in a high salt diet. *Drosophila Information Service*. 94: 174-176.
- Woodruff, R. C. and A. M. Boulton. 2011. Lethal mutations and their elimination by selection in natural populations of *Drosophila melanogaster*. *Drosophila Information Service*. 94:176-180.
- Woodruff, R. C. and John P. Russell. 2011. The role of reproduction and recombination in adaptive evolution. *Drosophila Information Service*: 94: 180-184.
- Woodruff, R. C. and John P. Russell. 2011. Spontaneous and gamma ray induced chromosome

- breakage in *Drosophila melanogaster*. *Drosophila Information Service*. 94: 184-186.
- Grimm, Abbey J., Ashley F. Kuchcinski and R. C. Woodruff. 2012. Effect of genetic background on viability of dominant visible mutations that are also recessive lethals in *Drosophila melanogaster*. *Drosophila Information Service*. 95: 157-161.
- Kuchcinski, Ashley F., Abbey J. Grimm and R. C. Woodruff. 2012. The identification of unequal crossing-over events at the Bar (*B*) locus of *Drosophila melanogaster*. *Drosophila Information Service* 95: 162-165.
- Woodruff, R. C., Ashley F. Kuchcinski, Abbey J. Grimm, Kourtnei C. Tolbert, Elyse A. Miller, Tyler L. Johnston, Marcus J. Langenderfer, Amanda L. Brady and Alexandra L. Ordway. 2013. Experimental verification that crossing-over events within inversion heterozygotes are eliminated in the gametes of *Drosophila melanogaster* females. *Drosophila Information Service*, 96: 241-245.
- Kuchcinski, Ashley F., Abbey J. Grimm, Kourtnei C. Tolbert, Elyse A. Miller and R. C. Woodruff. 2013. An attempt to select for increased recombination in *Drosophila melanogaster*. *Drosophila Information Service*, 96: 229-233.
- Tolbert, Kourtnei C., Joshua C. Carr, Christina E. Curts, Jennifer M. Kiser, Amanda L. Brady, Alexandra L. Ordway, Amanda C. Lyons and R. C. Woodruff. 2013. An attempt to identify new recessive sex-linked visible mutations in *Drosophila melanogaster*. *Drosophila Information Service*, 96: 245-248.
- Ordway, Alexandra L., Amanda L. Brady, Joshua C. Carr, Jennifer M. Kiser, Christina E. Curts, Kourtnei C. Tolbert and R. C. Woodruff. 2013. Instant synthetic species: tests of sexual isolation between compound-autosome stocks of *Drosophila melanogaster*. *Drosophila Information Service*, 96: 249-255.
- Clendenin, Heather R., Constance R. Santangelo, Rebecca L. Tyo, Joshua C. Carr, Jennifer M. Kiser, and R. C. Woodruff. 2014. Genetic drift leading to losses or fixations of neutral alleles. *Drosophila Information Service*, 97:181-183.
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- Carr, Joshua C., Jennifer M. Kiser, Heather R. Clendenin, Constance R. Santangelo, Rebecca L. Tyo, and R. C. Woodruff. 2014. *Drosophila melanogaster* as a model system to measure the effect of inbreeding depression on the viability of offspring of first cousin matings. *Drosophila Information Service*, 97:186-188.
- Santangelo, Constance R., Kathryn A. Knackstedt, Henry B. Thorpe, Jennifer M. Kiser, Michael A. Balinski and R. C. Woodruff. 2014. Genetic drift leading to fixation of the *bw^v* neutral allele of *Drosophila melanogaster*. *Drosophila Information Service*, 97:192-194.
- Knackstedt, Kathryn A., Henry B. Thorpe, Constance R. Santangelo, Michael A. Balinski, and R. C. Woodruff. 2015. Can selection alter the frequency of recombination of *Drosophila melanogaster*? *Drosophila Information Service*, 98: 153-155.
- Thorpe, Henry B., Kathryn A. Knackstedt, Tyler M. Birkholz, Christopher J. Schimmoeller, Michael A. Balinski, and R. C. Woodruff. 2015. The influence of autosomal genetic background on the fitness of a mutant sex-linked gene and linked loci in *Drosophila melanogaster*. *Drosophila Information Service*, 98: 156-157.
- Schimmoeller, Christopher J., Lindsay A. Honigford, Daniel R. Rochester, Michael A. Balinski, and R. C. Woodruff. 2016. "Reduction in fitness and possible population extinctions due to the accumulation of deleterious mutations on non-recombining X chromosomes in *Drosophila melanogaster* males. *Drosophila Information Service*, 2016, 99: 85-88.
- Rochester, Daniel R., Lindsay A. Honigford, Christopher J. Schimmoeller, Michael A. Balinski, and

- R. C. Woodruff. 2016. New Species of *Drosophila* or not. *Drosophila Information Service*, 99: 88-89.
- Dollard, Renee E., Ashley M. Everett, Daniel R. Rochester, Christopher J. Schimmoeller, Michael A. Balinski and R. C. Woodruff. 2016. Chemical stress and recombination in *Drosophila melanogaster*. *Drosophila Information Service*, 99: 89-92.
- Everett, Ashley M., Renne E. Dollard, Daniel R. Rochester, Christopher J. Schimmoeller, Michael A. Balinski and R.C. Woodruff. 2016. Heritability for bristle numbers in *Drosophila melanogaster*. *Drosophila Information Service*, 99: 92-94.
- Everett, Ashley M., Kelsey Allyse Buettner, Marissa Rachelle Gittrich, Joseph Hasseltine, Matthew Alec Schaefer, Michael A. Balinski and R.C. Woodruff. 2016. CRISPR/Cas9 induced mutations of the white gene of haplo-X and diplo-X *Drosophila melanogaster*. *Drosophila Information Service*, 99: 97-101.
- Schimmoeller, Christopher J., Michael A. Balinski and R.C. Woodruff. 2017. Effect of maternal age on recombination rate in *Drosophila melanogaster*. *Drosophila Information Service*, 100:207-210.
- Buettner, Kelsey Allyse, Rachel Ann Crowl, Ashley M. Everett, Cameron Drew Friedman, Marissa Rachelle Gittrich, Joseph Hasseltine, Nathaniel P. Locke, Griffith M. Saunders, Matthew Alec Schaefer, Christopher J. Schimmoeller, Kayla Christina Schwartz, Michael A. Balinski and R. C. Woodruff. 2017. Reversion of the *Bar* (*B*) mutation in the Base X chromosome of *Drosophila melanogaster* by unequal crossing over. *Drosophila Information Service*, 100: 210-213.
- Gittrich, Marissa Rachelle, Rachel Ann Crowl, Cameron Drew Friedman, Nathaniel P. Locke, Griffith M. Saunders, Christopher J. Schimmoeller, Kayla Christina Schwartz, Michael A. Balinski and R. C. Woodruff. 2017. Measuring narrow-sense heritability in *Drosophila melanogaster* using inbred strains. *Drosophila Information Service*, 100, 213-215.
- Crowl, Rachael Ann, Cameron Drew Friedman, Nathaniel P. Locke, Griffith M. Saunders, Kayla Christina Schwartz, Michael A. Balinski and R. C. Woodruff. 2017. Lack of chromosome breakage and altered sex ratios by copper sulfate in *Drosophila melanogaster*. *Drosophila Information Service*, 100:215-218.
- Schwartz, Kayla Christina, Griffith M. Saunders, Cameron Drew Friedman, Nathaniel P. Locke, Rachel Ann Crowl, Michael A. Balinski and R. C. Woodruff. 2018. Identification of the phenotype and genotype of an unknown dominant X-linked female sterile mutation in *Drosophila melanogaster*. *Drosophila Information Service*, 101:81-82.
- Saunders, Griffith M., Kayla Christina Schwartz, Teagan Ann Bourne, Jessica Ewa Madry, Erin Nicole Soule, Michael A. Balinski and R. C. Woodruff. 2018. Modification of the *Sco* bristle phenotype by the genetic background in *Drosophila melanogaster*. *Drosophila Information Service*, 101:82-85.
- Friedman, Cameron Drew, Hannah Shereen Burkard, Jessica Ewa Madry, Erin Nicole Soule, Michael A. Balinski and R. C. Woodruff. 2018. Influence of sodium chloride and temperature stresses on recombination in *Drosophila melanogaster*. *Drosophila Information Service*, 101:88-90.

GRADUATE STUDENTS ADVISED:

- Richard F. Lyman, M.S., 1979. Parameters of hybrid dysgenesis in *Drosophila melanogaster*.
- Robert K. Brodberg, Ph.D., 1982. Characterization of hybrid dysgenesis in a natural population line of *Drosophila melanogaster*.
- Mark A. Seeger, M.S., 1984. Identification of an inducible DNA repair system in *Drosophila melanogaster* oocytes.
- Kristin B. Vessey, M.S., 1985. Effect of a deficiency in DNA repair on excision of P elements in *Drosophila melanogaster*.

- Mary Ellen A. Newport, Ph.D., 1985. Artificial selection on mating systems in *Drosophila*.
- Elizabeth S. Norris, M.S., 1985. Characterization of isolated *Drosophila melanogaster* sublines for the P transposable element mediated hybrid dysgenesis syndrome.
- Richard F. Lyman, Ph.D., 1986. Spontaneous genetic damage associated with transposable DNA elements in the *melanogaster* subgroup of *Drosophila*.
- Kim D. Hosterman, M.S., 1987. The effect of sperm storage and male aging upon the transposition of P DNA elements in repair efficient and repair deficient strains of *Drosophila melanogaster*.
- Elizabeth S. Norris, Ph.D., 1990. Transposable DNA elements and microevolution: The role of P elements in natural populations of *Drosophila*.
- A. Alex Szekely, M.S., 1990. P element-mediated germ line transformation of *Drosophila melanogaster* with the *TC1* transposable DNA element from *Caenorhabditis elegans*.
- Jeffery J. Wallery, M.S., 1990. Frequency and evolutionary implications of premeiotic clusters of mutation in *Drosophila melanogaster*.
- Rani Mahendran, M.S., 1993. The genetic stability of the *TC1* DNA element of *C. elegans* in *D. melanogaster*.
- Robert Merker, M.S., 1994. Mitochondrial DNA restriction fragment length variation in Lake Erie Walleye.
- Alexey G. Nikitin, Ph.D., 1997. Somatic movement of transposable elements and lifespan of *Drosophila* species.
- Amy L. Russell, M.S., 1997. The genetics and evolution of the *mariner* transposable element in natural populations of *Drosophila simulans*.
- Haiying Huai, Ph.D., 1997. The evolutionary implications of premeiotic clusters of mutation.
- Bethany Haller, Ph.D., 1998. The characterization and evolutionary implications of a P[w] transposable DNA element of heterochromatin of the Y chromosome of *Drosophila melanogaster*.
- Rebecca Bishop, M.S. Plan II, 2000. DNA repair and aging in *Drosophila melanogaster*.
- Sonia Symphorien, M.S. 2002. The role of mutation and repair in aging.
- Sheng Gu, Ph.D. 2004. The role of new deleterious mutations in the extinction of populations: Theoretical and experimental studies.
- Yi Gong, Ph.D., 2005. The genomic rate & lifespan effect of deleterious mutations in *D. melanogaster*.
- Elizabeth Morgan, MS. 2005. Stress: The final frontier—The effects of mild environmental stress on the rate of new mutations in *Drosophila melanogaster*.
- Priti Azad, Ph.D. 2006. The role of new mutations in evolution and cloning: Genetic analysis to identify the role of new beneficial mutations in increasing viability and salt tolerance in *Drosophila melanogaster* and the influence of deleterious mutations on cloning efficiency.
- Mingcai, Zhang, MS., 2010. The role of beneficial mutations in adaptive evolution.
- Michael Balinski, MS., 2016. Differential sexual survival of *D. melanogaster* on copper sulfate.
- Michael Balinski, PhD. 2016, in progress

UNDERGRADUATE RESEARCH SUPERVISED: BOWLING GREEN STATE UNIV. (128 total):
 Jeffery Boyce, Janet Aller, Beth Baumbarger, John Gunn, Alex Rinehart, Alex Szekely, Paul Biedenbach, Rachael Ludwiczak, Kristen Earle, Sean Seaber, Janet Aller, Jeffrey Boyce, James Aust, Lynn Carter, Amy Duerr, Karol Rubin, Nancy Jacobs, Kevin Dean, Kathryn Blaes, Kathleen Foltz, Jeffrey Dayhuff, Karen Kalumuck, Kim Tourdot, Charles Chiofolo, Kathleen Charvat, Paul Johnson, Patricia Sweeney, Thomas Shehab, Catherine Ryan, Barry Hefelfinger, Patricia Sweeney, Deborah Eymann, Alan Leggett, Susana Pecina, John Rice, Helena Palka, Edmond Russ, Lynne Brown, Amy Solet, Bob Kurt, Cheryl Sika, Robert Kessler, Jennifer Gerken, Vincent Pallotta, Katherine Morrison, Amy Russell, Angela Burt, Karen Maziarz, Heather Brahaney, Michelle Pressley, Laurie Blank, Susan Talbot, Amy Whaley, Jayson Kurfis, Johnna Smithberger, Shawn Davidson, Matt Guess, Scott Guess, Thomas Obhof, Yatrik Shah, Angeli Rawat, Thomas Mancine, Jon Griffith, Meg Garn, Katie Drerup, Christin Curtice, Melissa Babcock, Tamara Muchiarone, Dustin Patterson, Dawn Belosky, Maria

Brown, Jill Laisure, Robin Valpy, Matthew Brinkman, Ann Szczepanik, Jessie Guinness, Jessica Heintzelman, Cynthia Toth, Katherine Onasch, Natalie Wiseman and Bethany Robinson, Caroline Coates, Amanda Lyons, Caitlin Rex, Sarah Rossiter, Jennifer Benson, Daniel Taylor, Rachel Marvin, Christopher Wagner, Abbey Grimm, Ashley Kuchcinski, Elyse Anne Miller, Kourtnei C. Tolbert, Tyler Johnston, Marcus Langenderfer, Joshua Carr, Amanda Brady, Jennifer Kiser, Christina Curts, Rebecca Tyo, Heather Clendenin, Constance Santangelo, Alexandra Ordway, Henry Thorpe, Kathryn Knackstedt, Patrick Tate, Tyler Birkholz, Christopher Schimmoeller, Lindsay Honigford, Daniel Rochester, Ashley Everett, Renee Dollard, Kelsey Buettner, Marissa Gittrich, and Matt Schaefer, Cameron Drew Friedman, Joseph Hasseltine, Nathaniel P. Locke, Griffith M. Saunders, and Kayla Christina Schwartz, Rachel Ann Crowl, Jessica Ewa Madry, Teagan Bourne, Erin Nicole Soule, Elise Ann Covell and Devin Miller.

NIH MINORITY HIGH SCHOOL APPRENTICE PROGRAM:

Corina Garcia (1985), Sherry Bation (1986), Paul Martinez (1987), Edward Garcia (1989), Takehito Furuyama (1990), and John Tang (1992).

STUDENT ACHIEVEMENT IN RESEARCH AND SCHOLARSHIPS (STARS):

Bowling Green State University, Mentor to Maria Brown, 2004-2005; Research on: The influence of stress on the rate of deleterious mutations in *Drosophila melanogaster*.

ORGANIZER AND CHAIR:

Mutagens with *Drosophila*," Third International Conf. Environmental Mutagen, Sept., 1981, Tokyo, Japan.

Workshop on "Drosophila Mutagenesis Testing," Fourth International Conference on Environmental Mutagens, June, 1985, Stockholm, Sweden.

Dept. of Biol. Sciences, Bowling Green State Univ, Departmental Research Retreat, 1993-1996.

INVITED TALKS ON RESEARCH:

Ohio Wesleyan University; Central Michigan University (2); University of Missouri, Kansas City; University of Wisconsin, Eau Claire; North Texas State University; University of Toledo (3); Kenyon College (3); University of Cambridge, England; Mount Union College, Defiance College, Ohio State University; Michigan State University; Purdue University (2); University of Texas at Austin; East Texas State University; University of Oklahoma (2); Williams College; Wayne State University (3); Fredonia State University; Akron University; Southwestern Oklahoma State University; University of Guelph, Miami University; Ohio University; Western Michigan Univ.; Wilmington College; Rice University; University of Nairobi, Kenya; Ball State University; University of Wisconsin; State University of Leiden, The Netherlands; Kenyatta University, Kenya; University of Michigan; John Carroll University; New England University, Australia; Davidson College; North Carolina State University; Loyola University, Chicago; University of Georgia, East Carolina University, University of Alabama, Northeast Louisiana University, University of Arkansas, Southwestern University and Saginaw Valley State University, Berry College, University of South Carolina Aiken, University of South Carolina.

FEDERAL & STATE RESEARCH AGENCIES REVIEW PANELS AND SITE VISIT TEAMS:

NIH Site Visit Team, Louisiana State University, Feb. 23-25, 1994.

NIH, NIEHS, Environmental Health Sciences (EHS) Review Committee, Research Triangle Park, NC, March 27-29, 1995.

NIH, Institute of Aging Ad Hoc Reverse Site Visit, Rockville, MD, April 9-10, 1996, and Telephone Conference March 31, 1997.

Texas Higher Education Coordinating Board, Research, Planning and Finance Division, The Advanced Research Program, Biological Sciences B Panel, August 15-17, 1997.

NASA *Drosophila* NAR Peer Review Panel, March-August, 2005.

ADMINISTRATIVE EXPERIENCE:

Director, Mid-America *Drosophila* Stock Center, 1977-1998.

Chair, Department of Biological Sciences, Bowling Green State University, 1993-1996

Figure below is from: Takada, H., R.C. Woodruff and J.N. Thompson, Jr. 1991. Collections of Drosophilidae in Kenya, with description of a new species of *Dettopsomyia*. Entomological News 101: 246-255.

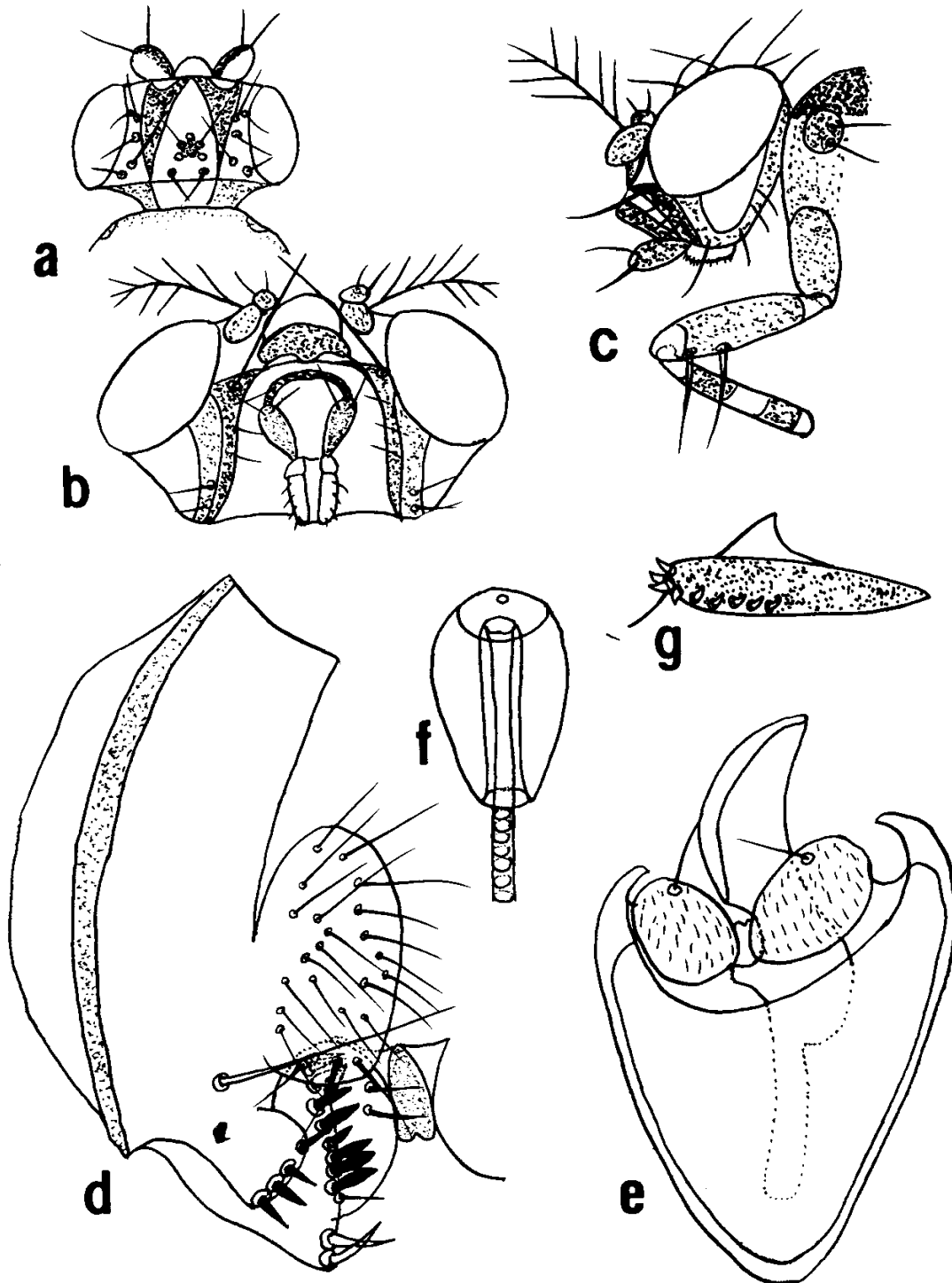


Fig. 2. *Dettopsomyia woodruffi* Takada, n.sp. (a) dorsal view of head, (b) ventral or anterior view of head, (c) lateral view of head and first leg, (d) peripheral phallic organs, (e) ventrolateral aspect of phallic organs, (f) spermatheca, (g) egg-guide of female.