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EDUCATION:

Ph.D. in Ecology and Evolution, University of Pennsylvania. Thesis entitled "Fluid-mediated dispersal: effects on the distribution and foraging behavior of stream insects". 1989 - 1996.

M.S. in Biology. Central Michigan University. 1988-1989.

B.Sc. in Biology, University of Coimbra, Portugal. Senior thesis entitled "Hydrobiological survey of two Portuguese rivers: a multivariate analysis". 1981-1986.

Teaching Certificate of Proficiency in English, University of Cambridge, through the International House of Coimbra, Portugal. 1978-1984.

OTHER AFFILIATIONS:

Research Associate, National Museum of Natural History, Smithsonian Institution, Washington DC. 2001- present.

Research Associate in the Biology Department, University of Delaware, Newark, DE. September 2005 - present

SCHOLARSHIPS:

National Research Council Associateship 1999-2001 at the Walter Reed Army Institute of Research (WRAIR). Advisor: Richard Wilkerson.

Smithsonian Post-doctoral Fellowship 1996-1997 at the National Zoo. Advisor: Robert Fleischer.

Masters Fellowship from Central Michigan University, USA 1988-1989.

Research Scholarship from the Portuguese National Scientific Research Institute in the Zoology Department of the University of Coimbra, Portugal 1986-1988.

TEACHING AND WORKSHOPS:

Invited Lecturer (2003, 2004, 2006) University of Pennsylvania Medical School, Microbiology Department. Philadelphia, USA. Course entitled "Emerging infectious Diseases".

PA-DEP Workshop (11 March 2003) Academy of Natural Sciences. One-day workshop for the Pennsylvania Department of Environmental Protection on the use of Genetic Markers in Vector Control. The workshop included an introduction to molecular

methods (DNA chemistry, DNA extraction, PCR, sequencing), a “hands-on” laboratory practice using a species diagnostic PCR, and a series of research short talks by members of my laboratory.

Mentor of REU- NSF student, Michael Faybyshev (June to August 2002), Tarannum Jalleel (June to August 2005). Robert James Henry (June to August 2006), Academy of Natural Sciences, Philadelphia.

Mentor of Thomas Jefferson HighSchool for Science and Technology student, Sarina Mohanti (October 1997 to May 1998), National Zoological Park, Washington, DC.

Lecturer in Introductory Biology (January 1996 to May 1996) University of Pennsylvania.

Graduate Teaching Assistant (August 1989 May 1992 and January 1995 to May 1996) University of Pennsylvania. Taught labs in: Advanced Community and Ecosystem Ecology (graduate level), Advanced Molecular Biology and Genetics (graduate level), Evolution, Statistics, Invertebrate Zoology, Microbiology, Introductory Biology.

Lecturer in Biometrics (substitute teacher for part of the Winter Semester 1989, Central Michigan University, Mt. Pleasant, USA).

Graduate Teaching Assistant (April 1987 to July 1989, University of Coimbra, Portugal) teaching labs in: Animal Ecology, Entomology, Environmental Physiology, Invertebrate Zoology, and Vertebrate Zoology.

High School teacher (November 1985 to September 1986, Escola C+S de Miranda do Corvo, Portugal). Biology and Health (8th and 9th grades).

GRANTS:

Active:

PI in a NIAID contract to the Wadsworth Center, NY Dept. of Health, a response to RFP NIH-NIAID-DMID-02-24 “U.S. Based Collaboration in Emerging Viral and Prion Diseases”. Contract # N01-A1-25480. Sub-contract entitled “Patterns of expansion of newly introduced species and impact on viral transmission: tools and tests”. Oct. 2002 – Sept 2009 (\$723,548).

Closed:

Collaborator in NSF BioComplexity grant to David C. Duffy (University of Hawaii). Proposal# DEB-0083944 entitled "Biocomplexity of Introduced Avian Diseases in Hawaii: Threats to Biodiversity of Native Forest Ecosystems". Co-PI's are Carter Atkinson, Michael D. Samuel, Robert C. Fleischer, Dennis LaPointe, Andy Dobson, Warren Porter, and Susan Jarvi. Jan 2001 - Aug 2006 (\$4,188,575 – \$500,000 granted to my laboratory for vector population genetics).

Co-PI with R.C. Fleischer (NMNH, Smithsonian Institution) in NIH R01 grant in the “Evolution of infectious diseases” panel. Proposal# 1R01GM063258 entitled “Disease Dynamics Following Multiple Vector Introductions”. May 2001 – Apr. 2006 (\$1,383,678).

Co-PI with Laura Kramer and Jan Conn (Wadsworth Center, NY Dept. of Health) in a CDC/NIH grant in the Applied Research in Emerging Infections panel. Proposal# U50/CCU220532 entitled “*Culex* population variability in New York State: impact on WN virus”. Oct. 2001 - Sept 2005 (\$964,332).

PI in grant from the Department of the Army entitled “The regal fritillary butterfly in the eastern United States; molecular genetic tools for conservation and re-introduction”. Aug. 2003-Dec. 2004 (\$99,049.00).

FY01 Internal Army Grant with Dr. Richard Wilkerson. 2001. Project entitled “Vectors as bottlenecks: what knowing the vector species tells us about human malaria diversity” (\$87,000).

Restricted Endowment - Abbott Fund, National Zoological Park, USA. 1998. Project entitled “Protecting a biodiversity hot-spot” (\$6,000).

Friends of the National Zoo, USA. 1997-1998. Extension of the Smithsonian Fellowship (\$32,000).

Co-PI with David D. Hart in NSF Dissertation Improvement Grant, National Science Foundation, USA. 1992-1996. Short title: “Fluid-mediated dispersal” (\$9,000).

ORAL PRESENTATIONS:

Multiple oral presentations (many invited) at Scientific meetings since 1988 (American Society of Tropical Medicine and Hygiene, American Mosquito Control Association, American Society of Naturalists, Entomological Society of America, North American Benthological Society, Pennsylvania Vector Control Association, Society for the Study of Evolution, Society of Vector Ecology, Society of Systematic Biologists) and invited talks in Graduate Seminar Series (University of California, Santa Barbara; Woods Hole Marine Biological Laboratory; University of Maryland, College Park; St. Mary’s University, University of Pennsylvania Veterinary School; Rutgers University; Georgetown University; Philadelphia University, Temple University, University of Delaware).

REFEREED PUBLICATIONS:

Fonseca DM, Smith JL, Kim H-C, Mogi M. 2007. Population genetics of the mosquito *Culex pipiens pallens* reveals sex-linked asymmetric introgression by *Culex quinquefasciatus* **American Journal of Tropical Medicine and Hygiene** (accepted with minor revisions).

Keyghobadi N, LaPointe D, Fleischer RC, Fonseca DM. 2006. Fine-scale population genetic structure of a wildlife disease vector: the southern house mosquito on the island of Hawaii **Molecular Ecology** 15(13):3919-30.

Beadell JS, Ishtiaq F, Covas R, Melo M, Warren BH, Atkinson CT, Bensch S, Graves GR, Jhala YV, Peirce MA, Rahmani AR, Fonseca DM, Fleischer RC. 2006. Global Phylogeography of Hawaii’s Avian Malaria **Proceedings of the Royal Society of London** 273(1604):2935-44.

Bahnck CM and Fonseca DM. 2006. Rapid assay to identify the two genetic forms of *Culex* (*Culex pipiens* L. (Diptera: Culicidae) and hybrid populations **American Journal of Tropical Medicine and Hygiene** 75(2):251-255.

Fonseca DM, Smith JL, Wilkerson RC, and Fleischer RC. 2006. Pathways of expansion and multiple introductions illustrated by large genetic differentiation among worldwide populations of the southern house mosquito **American Journal of Tropical Medicine and Hygiene**, 74(2): 284-289.

Keyghobadi N, Unger KP, Weintraub JD, Fonseca DM. 2006. Remnant populations of the regal fritillary (*Speyeria idalia*) in Pennsylvania: local genetic structure in a high gene flow species **Conservation Genetics** 7:309-313.

Widdel AK, Mccuiston LJ, Crans WJ, Kramer LD, and Fonseca DM. 2005. Finding needles in the haystack: single copy microsatellite loci for *Aedes japonicus* (Diptera: Culicidae). **American Journal of Tropical Medicine and Hygiene** 73(4):744-748.

Smith JL, Keyghobadi N, Matrone MA, Escher RL, Fonseca DM 2005. Cross-species comparison of microsatellite loci in the *Culex pipiens* complex and beyond. **Molecular Ecology Notes** 5:697-700.

Li C, Wilkerson RC and Fonseca DM. 2005. Isolation of polymorphic microsatellite markers from the malaria vector *Anopheles marajoara* (Diptera: Culicidae). **Molecular Ecology Notes** 5: 65-67.

Fonseca DM, Keyghobadi N, Malcolm C, Mogi M, Schaffner F, Fleischer RC, and Wilkerson RC. 2004. Response to Outbreak of West Nile virus in North America. **Science** 306 (5701): 1473-1475.

Smith JL and Fonseca DM (2004) Rapid assays for identification of members of the *Culex* (*Culex*) *pipiens* complex, their hybrids, and other sibling species (Diptera: Culicidae) **American Journal of Tropical Medicine and Hygiene** 70(4): 339-345.

Fonseca DM, Keyghobadi N, Malcolm C, Mehmet C, Mogi M, Schaffner F, Fleischer RC, and Wilkerson RC. 2004. Emerging vectors in the *Culex pipiens* complex. **Science** 303:1535-1538.

Keyghobadi N, Matrone MA, Ebel GD, Kramer, LD, and Fonseca DM. 2004. Microsatellite loci from the northern house mosquito (*Culex pipiens*), a principal vector of West Nile virus in North America. **Molecular Ecology Notes** 4: 20-22

Hagedorn M, Lance SL, Fonseca DM, Kleinhans FW, Artimov D, Fleischer R, Hoque ATMS, Hamilton MB and Pukazhenthil BS (2002) Altering Fish Embryos With Aquaporin-3: An Essential Step Toward Successful Cryopreservation. **Biology of Reproduction** 67(3):961-966.

Fonseca DM, Scott Campbell S, Crans WJ, Mogi M, Miyagi I, Tome T, Bullians M, Andreadis TG, Berry RL, Pagac B, Sardelis M, and Wilkerson RC (2001) *Aedes* (*Finlaya*) *japonicus* (Diptera: Culicidae) a newly recognized mosquito in the USA: analyses of genetic

variation in the US and putative source populations. **Journal of Medical Entomology**. 38(2): 135-146.

Fonseca DM and Hart DD (2001) Colonization history masks habitat preferences in local distributions of stream insects. **Ecology** 82 (10): 2897–2910.

Fonseca DM, LaPointe D and Fleischer RC (2000) Bottlenecks and multiple introductions: population genetics of *Culex quinquefasciatus*, the vector of avian malaria in Hawaii. **Molecular Ecology** 9:1803-1814.

Fonseca DM (1999) Fluid-mediated dispersal in streams: a comparison of predictive models of settlement. **Oecologia** 121(2): 212-223.

Finelli CM, Hart DD and Fonseca DM (1999) Evaluating the spatial resolution of an acoustic Doppler velocimeter and the consequences for measuring near-bed flows. **Limnology and Oceanography** 44(7): 1793-1801.

Fonseca DM, Atkinson CT and Fleischer RC (1998) Microsatellite primers for *Culex quinquefasciatus*, the vector of avian malaria in Hawaii. **Molecular Ecology**, 7(11): 1617-1619.

Bourguet D, Fonseca D, Vourch G, Dubois M-P, Chandre F, Severini C and Raymond M (1998) The acetylcholinesterase gene *Ace*: a diagnostic marker for the *pipiens* and *quinquefasciatus* forms of the *Culex pipiens* complex. **Journal of the American Mosquito Control Association**, 14(4): 390-396.

Fonseca DM and Hart DD (1996) Density-dependent dispersal of black fly neonates is mediated by flow. **Oikos**, 75: 49-58.

Hart DD and Fonseca DM (1996) An important confluence for stream ecology. **Trends in Ecology and Evolution**, 11: 272-273.

Simões Graça MA, Fonseca DM and Castro S (1989) The distribution of macro invertebrate communities in two Portuguese rivers. **Freshwater Biology**, 22: 297-308.

PATENTS:

US patent. Title of application: “The use of major intrinsic proteins in non-mammalian embryo cropreservation”. Application no.: 6338188. Provisional status

MANUSCRIPTS IN REVISION

Fonseca, DM, Widdel AK, Spilchiger S-E, Hutchinson M, Kramer, LD. Fine-scale population genetics of *Aedes japonicus* (Diptera: Culicidae), a US newcomer, reveals multiple introductions **Molecular Biology and Evolution**

EDITORIALS DESCRIBING MY WORK:

Beastly News, *National Geographic*. 2006 (July): 22. Results of the worldwide survey of populations of the southern house mosquito.

News of the week in Genetics. *Science*. 2004. 303: 1451. "Hybrid Mosquitoes Suspected in West Nile Virus Spread" by Jennifer Couzin.

Editorial. *Science News*. 2004. 165(10): 149. "Worst of two Worlds: hybrid mosquitoes spread West Nile virus" by Ben Harder.

News. *Nature Medicine*. 2002. 9(5): 488. "Mosquito mating game could mean buzzkill for Brits" by Laura Spinney.

REFERENCES:

Dr. Laura Kramer
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