

# CURRICULUM VITAE

*Kent D. Dunlap*

Professor of Biology

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## Education

Ph.D. 1993 University of Washington, Seattle; Zoology, Dr. J. Wingfield, advisor,  
B.A. 1985 Macalester College, Saint Paul, Minnesota; History and Biology.

## Academic Appointments

Visiting Teaching Fellow, University of the Republic, Montevideo Uruguay, 2023.  
Visiting Research Fellow, Gulbenkian Institute of Science, Lisbon, Portugal, 2019.  
Charles A. Dana Research Professor, Trinity College 2017-2019  
Acting Chair of Biology, Trinity College, Fall 2015, 2019, 2023  
Faculty Co-organizer, III Latin American School of Neuroethology, Montevideo, Uruguay, 2016.  
Visiting Scientist, Smithsonian Tropical Research Institute, Panama, 2014  
Professor of Biology, Trinity College, 2012-present.  
Course Faculty, Latin American Graduate Neuroscience School of the International Brain Research Organization, Montevideo, Uruguay, 2009.  
Charles A. Dana Research Associate Professor, Trinity College, 2007-2009.  
Associate Professor of Biology, Trinity College, 2004-2012.  
Assistant Professor of Biology, Trinity College, 1998-2004.  
NIH Post-doctoral Fellow, Dept Zoology, University of Texas, Austin, 1995-1998.  
International Post-doctoral Fellow, Dept Anatomy, University of Vienna Medical School, Vienna, Austria, 1995.  
NSF/NATO Post-doctoral Fellow, Nat'l Museum of Natural Science, Madrid, 1994  
Visiting Assistant Professor of Biology, Macalester College, 1993.

## Courses at taught at Trinity College

Biol 135 Movement and Sensation (non-majors)  
Biol 140 Biological Systems (non-majors)  
Biol 182 Evolution of Life  
Biol 183 Cellular Basis of Life  
Biol 216 Human Anatomy  
Biol 319 Animal Physiology  
Biol 473 Sensory Biology  
Biol 456 Biology of Communication  
Biol 403 Research Seminar  
Nesc 301 Methods in Neuroscience  
FYS 105 Science and Religion (First-Year Seminar)  
FYS 140 Ethical Dilemmas through Film (First-Year Seminar)  
FYS 211 Sense and Nonsense (First-Year Seminar)

## **Undergraduate Research Students Trained: 34 (since 1998)**

- 20 co-authored publications from Trinity
- 24 enrolled in graduate programs after Trinity
  - 11 in PhD programs
  - 4 in MD programs
  - 2 enrolled in MD/PhD programs
  - 7 in other graduate programs

## **Awards and Fellowships**

- Fulbright Specialist, Universidad de la Republica, Montevideo, Uruguay 2023.
- Fulbright Scholar, Lisbon, Portugal, Spring 2019.
- Outstanding Contributor to Development of Neuroethology in Latin America, International Society of Neuroethology. 2016.
- Fulbright Scholar, Montevideo Uruguay, Spring 2009.
- Charles A. Dana Research Associate Professor, Trinity College, 2007-2009.
- Fellowship, Institute for the Study of Secularism, Trinity College, 2007.
- Fellowship for International Visiting Scientists. University of Vienna, Vienna, Austria. Dr. Gerd Muller, advisor, 1995.
- NSF / NATO Post-Doctoral Fellowship in Science, National Museum of Natural Science, Madrid, Spain, Dr. P. Alberch, advisor, 1994.
- Research Fellowship in Conservation Biology, Institute of Environmental Studies, University of Washington and Woodland Park Zoo, Seattle, 1992.
- Snyder Award in Vertebrate Zoology, University of Washington, 1991.
- National Science Foundation Graduate Fellowship, Honorable Mention, 1988.

## **Grants (since 2001)**

- Company of Biologists (\$1950)
  - "Grant to support student attendance at Electric Fish 2020 Meeting, Lisbon, Portugal."* 2020. (Postponed due to COVID pandemic)
- Faculty for Undergraduate Neuroscience, Equipment Loan Program (\$12,000)
  - "Socially-induced neurogenesis in adult electric fish: assessing the contribution of locomotor activity using EthoVision® animal tracking software."* 2010-2012.
- National Institute of Mental Health (\$215,000)
  - "Socially induced brain cells in adults: fate, activity and regulation"* 2007-2010.
- National Institute of Mental Health (\$147,000)
  - "Social and steroidal influences on adult neurogenesis"*, 2003-05.
- Trinity College Faculty Research Committee – Research Grants
  - "Brain cell production, neuroglobin and the tolerance to low oxygen in South American electric fish"* 2021. (\$3000) (Awarded but returned due to COVID cancelation).
  - "Brain cell production and tolerance to low O<sub>2</sub> in African fish."* 2019, (\$3000),
  - "Testing the influence of predators on brain cell production, stress hormones and learning in a natural population of electric fish"* 2014-15. (\$4045)
  - "How does group interaction affect brain and aggression?"* 2011-2013. (\$4,975)
  - "Structure and evolution of electrocommunication signals"*, 2001. (\$4,850)
- Trinity College– Student Assistantships
  - Research Assistantship Grants (19 students 1999-2001, 2010-16)
  - HHMI Thesis Fellows and Research Students (5 students, 2004-2007)

## Publications

### Book:

Dunlap, K.D. *The Neck: A Natural and Cultural History*, University of California Press, (in press; release date: February 2025).

### Journal Articles and Book Chapters:

(\*indicates Trinity College student as co-author)

Valiño, G., **K.D. Dunlap**, and L. Quintana. Androgen receptors rapidly modulate non-breeding aggression in male and female weakly electric fish (*Gymnotus omarorum*). *Hormones and Behavior* 159 (2023): 105475.

Dunlap K.D., H.M. Koukos\*, B.P. Chagnaud, H.H. Zakon, and A.H Bass. (2021) Vocal and electric fish: Revisiting a comparison of two teleost models in the neuroethology of social behavior. *Frontiers in Neural Circuits* doi.org/10.3389/fncir.2021.713105

Dunlap, K.D., M.C. Teles, and R.F. Oliveira. (2021) Social stimuli increase activity of adult-born cells in the telencephalon of zebrafish, *Danio rerio*. *Journal of Experimental Biology* 224: jeb242253

Dunlap, K.D., M.M. Vergara\*, and J.H. Corbo\*. (2020) Social interaction buffers the negative effects of tail injury on brain cell proliferation in an electric fish, *Apteronotus leptorhynchus*. *Developmental Neurobiology* 80: 168-177

Dunlap K.D., J.H. Corbo\* M.M. Vergara\*, S.M. Beston, and M.R. Walsh. (2019) Predation drives the evolution of brain cell proliferation and brain allometry in male Trinidadian killifish, *Rivulus hartii*. *Proceedings of the Royal Society B* 286:20191485.

Dunlap, K.D., G. Keanne\*, M. Ragazzi\*, E. Lasky\*, and V. Salazar (2017) Simulated predation inhibits brain cell proliferation in weakly electric fish (*Apteronotus* and *Brachyhypopomus*). *Journal of Experimental Biology* 220: 2328-2334.

Dunlap, K.D., A. C. Silva, G.T. Smith and H.H. Zakon (2017) Weakly electric fish: Behavior, neurobiology and neuroendocrinology. In: *Hormones, Brain and Behavior*, D.W. Pfaff, and M. Joels, eds. 3<sup>rd</sup> edition. Oxford: Academic Press. 69-98.

Dunlap, K.D. (2016) Fish neurogenesis in context: assessing environmental influences on brain plasticity within a highly labile physiology and morphology. *Brain, Behavior and Evolution* 87: 156-166.

Dunlap K.D., A. Tran, M.A. Ragazzi\*, R. Krahe, V.L. Salazar (2016) Predators inhibit brain cell proliferation in natural populations of electric fish, *Brachyhypopomus occidentalis* *Proceedings of the Royal Society B* 283: 20152113.

Dunlap, K. D. and M.A. Ragazzi\* (2015) Temperature acclimation and thyroxine treatment modify electric organ discharge frequency in an electric fish, *Apteronotus leptorhynchus*.

*Physiology and Behavior* 151: 64-71.

- Dunlap, K.D., M. Chung\*, and J. Castellano\* (2013) Influence of long-term social interactions on chirping behavior, steroid levels and neurogenesis in electric fish. *Journal of Experimental Biology* 216: 2434-2441
- Dunlap, K.D, and M. Chung\* (2012) Social novelty enhances brain cell proliferation, cell survival and chirp production in an electric fish, *Apteronotus leptorhynchus*, *Developmental Neurobiology* 73: 324-32.
- Dunlap, K.D., D. Jashari\* and K.M. Pappas\* (2011) Glucocorticoid receptor blockade inhibits brain cell addition and aggressive signaling in electric fish, *Apteronotus leptorhynchus*. *Hormones and Behavior* 60: 275-83.
- Pappas\*, K. and **K.D. Dunlap** (2011) Shocking comments: Electrocommunication in teleost fish. In: Farrell, A.P. (ed.) *Encyclopedia of Fish Physiology: From genome to environment*. Volume I, pp. 699-706. San Diego: Academic Press.
- Dunlap, K.D., A. C. Silva and M. Chung\* (2011) Environmental complexity, seasonality and brain cell proliferation in weakly electric fish, *Brachyhypopomus gauderio*. *Journal of Experimental Biology* 214: 794-805.
- Anderson\*, K. E., D. G. Blackburn, and **K.D. Dunlap** (2011) Scanning electron microscopy of the placental interface in the viviparous lizard, *Sceloporus jarrovi* (Squamata: Phrynosomatidae). *Journal of Morphology* 272: 465-84.
- Blackburn, D. G., G. S. Gavelis\*, K. E. Anderson\*, A. R. Johnson\* and **K.D. Dunlap** (2010) Placental specializations of the mountain spiny lizard, *Sceloporus jarrovi* (Phrynosomatidae). *Journal of Morphology* 271: 1153-75.
- Dunlap, K.D. B. DiBenedictis\* and S. Banever\* (2010) Chirping response of weakly electric knife fish (*Apteronotus leptorhynchus*) to low frequency electric signals and to heterospecific electric fish. *Journal of Experimental Biology* 213: 2234-42.
- Dunlap, K.D., E. McCarthy\*, D. Jashari\* (2008) Electrocommunication signals alone are sufficient to increase neurogenesis in the brain of adult electric fish, *Apteronotus leptorhynchus*. *Developmental Neurobiology* 68: 1420-8.
- Dunlap, K.D., J. F. Castellano\* and E. Prendaj\* (2006) Social interaction and cortisol treatment increase cell addition and radial glia fiber density in the diencephalic periventricular zone of adult electric fish, *Apteronotus leptorhynchus*. *Hormones and Behavior* 50: 10-17.
- Dunlap, K.D. (2006) Ontogeny and scaling of hematocrit and blood viscosity in western fence lizards, *Sceloporus occidentalis*. *Copeia* 2006 (3): 535-538.
- Dunlap, K.D. and J. Larkins-Ford\* (2003) Diversity in the structure of electrocommunication signals within a genus of electric fish, *Apteronotus*. *Journal of Comparative Physiology A*. 189: 153-161.
- Dunlap, K.D. and J. Larkins-Ford\* (2003) Production of aggressive electrocommunication

- signals to progressively realistic social stimuli in male *Apteronotus leptorhynchus*. *Ethology* 109: 243- 258.
- Dunlap, K.D. and L. Oliveri\* (2002) Retreat site selection and social organization in captive electric fish, *Apteronotus leptorhynchus*., *J Comparative Physiology A* 188: 469 -477.
- Dunlap, K.D., P. L. Pelczar\*, and R. Knapp. (2002) Social interactions and cortisol treatment increase the production of aggressive electrocommunication signals in male electric fish, *Apteronotus leptorhynchus*. *Hormones and Behavior* 42: 97-108.
- Dunlap, K.D. (2002) Hormonal and body size correlates of electrocommunication behavior during dyadic interactions in a weakly electric fish, *Apteronotus leptorhynchus*. *Hormones and Behavior* 41:187-194.
- Dunlap, K.D., A. Yekta\* and G. T. Smith. (2000) Temperature dependence of electrocommunication signals and *in vitro* firing rate of pacemaker neurons in an electric fish (*Apteronotus leptorhynchus*). *Brain, Behavior and Evolution*. 55: 152 - 162.
- Zakon, H. H., and **K.D. Dunlap** (1999) Sex steroids and communication signals in electric fish: A tale of two species. *Brain, Behavior and Evolution* 54: 61-69.
- Zakon, H. H., L. M. McAnelly, G.T. Smith, **K.D. Dunlap**, G. Lopreato, J. Oestreich, and P. Few. (1999) Plasticity of the electric organ discharge: Implications for the regulation of ionic currents. *Journal of Experimental Biology* 202:1409 – 1416.
- Dunlap, K.D. and H. Zakon.(1998) Behavioral actions of androgens and androgen receptor expression in an electric fish, *Eigenmannia*. *Hormones and Behavior* 34: 30-38.
- Dunlap, K.D., P. Thomas and H. Zakon.(1998) Diversity of sexual dimorphism in electrocommunication signals and its androgen control within the genus *Apteronotus*. *Journal of Comparative Physiology A* 183: 66 - 75.
- Dunlap, K.D. and H. Zakon (1998) Hormones and communication signals in fish. In: *Encyclopedia of Reproduction*, Academic Press, New York.
- Dunlap, K.D., L. McAnelly and H. Zakon. (1997) Estrogen modifies an electrocommunication signal by altering the electrocyte sodium current in the weakly electric fish, *Sternopygus*. *Journal of Neuroscience* 17: 2869 - 2875.
- Wingfield, J., K. Hunt, C. Breuner, **K.D. Dunlap**, G. Fowler, L. Freed, and J. Lepson (1996) Environmental stress, field endocrinology and conservation biology. In: *Behavioral approaches to conservation biology*. Cambridge Univ Press, Cambridge, England.
- Dunlap, K.D. and B. Sanchiz (1996) Temporal dissociation between the development of the cranial and appendicular skeleton in an anuran, *Bufo bufo*. *Journal of Herpetology* 30: 506 – 513.
- Dunlap, K.D. and D.R. Church (1996) Interleukin-1 reduces activity level in fence lizards. *Brain, Behavior and Immunity* 10: 68 - 73.

- Dunlap, K.D. (1995) Hormonal and behavioral responses to food deprivation in a lizard: Implications for assessing stress in a natural population. *Journal of Herpetology* 29: 345 - 351.
- Dunlap, K.D. (1995) External and internal influences on indices of physiological stress. II. Seasonal and size-related variation in blood composition of free-living lizards during drought. *Journal of Experimental Zoology* 272: 85 - 94.
- Dunlap, K.D. and J. C. Wingfield (1995) External and internal influences on indices of physiological stress. I. Seasonal and population variation adrenocortical secretion in free-living lizards. *Journal of Experimental Zoology* 271: 36 - 46.
- Dunlap, K.D. and J. J. Schall (1995) Hormonal alterations and reproductive inhibition in lizards, *Sceloporus occidentalis* infected with the malarial parasite, *Plasmodium mexicanum*. *Physiological Zoology* 68: 608 - 621.
- Sinervo, B. and **K.D. Dunlap** (1994) Thyroxine affects behavioral thermoregulation but not growth rate in hatchling fence lizards, *Sceloporus occidentalis*. *Journal of Comparative Physiology B*: 164: 509 - 517.
- Dunlap, K.D. and T. Mathies (1993) The effects of nymphal ticks and their interaction with malaria on the physiology of male western fence lizards. *Copeia* 1993: 1041 - 45.
- Dunlap, K.D. and J.W. Lang (1990) Offspring sex ratio varies with maternal size in the common garter snake, *Thamnophis sirtalis*. *Copeia* 1990: 588 - 591.
- Dunlap, K.D. and R. Sridaran (1989) Administration of gonadotropin-releasing hormone to pregnant rats inhibits post-partum sexual behavior. *Pharmacology, Biochemistry and Behavior* 31: 725 - 728.
- Dunlap, K.D. and R. Sridaran (1988) Plasma levels of dihydrotestosterone during the estrus cycle in the rat: Implications for the regulation of lordosis behavior. *Physiology and Behavior* 42: 199 - 202.

### **Presentations at Professional Conferences (since 2001)**

- International Congress of Neuroethology, Lisbon Portugal, 2022
- International Congress of Neuroethology, Montevideo Uruguay, 2016
- Karger Symposium Speaker, JB Johnson Group. Soc. Neuroscience, Chicago, IL, 2015
- Canadian Conference on Electrosensation, Montreal, Canada, 2015.
- Society of Integrative and Comparative Biology, Austin TX, 2014.
- International Congress of Neuroethology, College Park MD, 2012.
- Gordon Conference on Neuroethology, Easton MA, 2011.
- Uruguayan Conference of Animal Behavior, Montevideo, Uruguay, 2009.
- Society for Neuroscience, Chicago, IL 2009.
- Gordon Conference on Neuroethology, Oxford, England 2008.
- International Congress of Neuroethology, Vancouver, BC 2007.
- International Congress of Neuroethology, Nyborg, Denmark, 2004.
- BEACON Conference on Neural Engineering, Hartford, CT 2003.
- Gordon Conference on Neuroethology, Oxford, England 2002.

## **Invited lectures at other universities and institutions (since 2001)**

Gulbenkian Institute of Science, Lisbon Portugal, 2019  
University of Toronto, Mississauga, ON, CA, 2018  
Michigan State University, Lansing, MI, 2018  
Indiana University, Bloomington, IN 2014.  
Indiana State University, Terre Haute IN 2013.  
University of Massachusetts, Amherst, MA 2011.  
Boston University, Boston, MA 2011.  
Brown University, Providence, RI 2009.  
McGill University, Montreal, Canada, 2009.  
Columbia University, New York, NY, 2008.  
Cornell University, Ithaca, NY, 2008.  
University of North Carolina, Chapel Hill, NC, 2007.  
City University of New York/ Hunter College, New York NY, 2006  
University of Connecticut Health Science Center, Farmington, CT 2005.  
Johns Hopkins University, Baltimore, MD, 2005.  
University of Ottawa Conference on Electrosensation, Ottawa, Canada, 2004.  
Wesleyan University, Middletown, CT, 2001.  
University of Virginia, Charlottesville, VA, 2001.  
University of Massachusetts, Amherst, MA, 2001.

## **Chairmanship of College Faculty Committees**

Jury Pool (2023-24)  
Admissions and Financial Aid (Chair, 2016-17)  
Faculty Research Committee (Chair, 2015)  
Academic Affairs (Chair, 2011-12)  
Institutional Animal Use and Care Committee (Chair 2005-2009; 2012, 2021, 2024)  
Ad hoc Committee to Revise the Quantitative Center (Chair, 2007)

## **Professional Service**

### Conference organizer:

Session Chair, Electric fish/Teleost Joint Symposium on Brain Evolution. International Congress of Neuroethology, Berlin, Germany, July 2024.  
Co-organizer, Electric Fish Satellite Symposium, International Congress of Neuroethology, Lisbon, Portugal, July 2022.  
Co-organizer of the Virtual Meeting for Electric Fish Researchers. Sept 2020-May 2021.  
11 meetings, 80-120 attendees.

### Thesis committees at other universities:

Marie Vollbrecht, Doctoral Committee, Humboldt University, Berlin, Germany, 2019-present  
Carolina Escamilla, Master's Thesis, Universidad de los Andes, Bogota, Colombia, 2017.  
Paula Pusso, Master's Thesis, Universidad de la Republica, Montevideo, Uruguay, 2009.

Grant reviewer:

Fulbright: US-Egypt Binational Student Program (2024)

Fulbright: Grant review panelist for US Scholars to S. America (2010-16)

National Institute of General Medical Sciences (NIH): Grant review panelist (2008-09)

Reviewer for CAREER grant and other grant proposals at National Science Foundation

Grant reviewer for National Geographic Society

Grant reviewer for Faculty for Undergraduate Neuroscience

Reviewer for scientific journals: *American Naturalist, Animal Behavior, Auk, Behavioral Ecology and Sociobiology, Brain, Behavior and Evolution, Comparative Biochemistry and Physiology, Current Zoology, Environmental Pollution, Environmental Technology Ethology, Frontiers in Behavioral Neuroscience, Frontiers in Neural Circuits, Functional Ecology, Hormones and Behavior, Gen Comp Endocrinology, Herpetologica, Herpetological Natural History, J Comp Physiol A, J Experimental Biol, J Experimental Zoology J Herpetology, J Physiology-Paris Naturwissenschaften, Physiology and Behavior, Proceedings of the Royal Society B, Proceedings of the National Academy USA*

**Areas of scholarship**

Vertebrate behavioral neuroscience and endocrinology; Adult neurogenesis and behavioral plasticity; Effects of social interaction, predation and parasites on the brain