

CURRICULUM VITAE

William R. Jeffery

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RESEARCH INTERESTS

Developmental Biology: Genetic basis of evolutionary change in development, visual system and pigment evolution and development, tissue repair and regeneration, development of new experimental model systems.

EDUCATION

B.S. (Biology) University of Illinois (1968)
 Ph.D. (Cell and Developmental Biology) Department of Biological Sciences, University of Iowa (1971)
 Post.Doc. (Oncology) McArdle Laboratory for Cancer Research, University of Wisconsin, Madison (1971-1972)
 Post.Doc. (Molecular Biology) Department of Biochemistry and Pharmacology, Tufts University School of Medicine, Boston (1972-1974)

PROFESSIONAL EXPERIENCE

2012-present Senior Adjunct Scientist, Eugene Bell Center for Regenerative Biology and Tissue Engineering, Marine Biological Laboratory, Woods Hole, MA
 1999-present Professor, Biology, and Affiliate Professor, Cell Biology and Molecular Genetics, University of Maryland, College Park, MD
 2009-2010 Visiting Scientist, Marine Biological Laboratory, Woods Hole, MA (Sabbatical)
 2011-2012 Visiting Scientist, Laboratory for Molecular Genetics, Ruđer Bošković Institute, Zagreb, Croatia (Sabbatical)
 2004-2005 Visiting Scientist, CNRS Institut de Neurobiologie Alfred Fessard, Gif-sur-Yvette, France (Sabbatical).
 1999-2004 Chair, Department of Biology, University of Maryland, College Park, MD,
 1996-1999 Department Head and Professor of Molecular and Cellular Biology, Department of Biology, The Pennsylvania State University, University Park, PA
 1990-1996 Professor, Molecular and Cellular Biology and Zoology, Division of Biological Sciences, University of California, Davis
 1995 Visiting Professor, Cell Biology, Vanderbilt University, School of Medicine, Nashville, TN (Sabbatical)
 1987-1990 Johann Friedrich Miescher Regent's Professor of Molecular Biology, University of Texas at Austin
 1983-1987 Co-Director, Embryology Course, Marine Biological Laboratory, Woods Hole, MA

1983	Visiting Professor, Department of Experimental Embryology, University of Utrecht, Netherlands (Sabbatical)
1980-1982, 1998	Instructor, Embryology Course, Marine Biological Laboratory, Woods Hole, MA
1977-1989	Assistant, Associate, and Full Professor, Zoology, University of Texas at Austin
1974-1977	Assistant Professor, Biochemical and Biophysical Sciences, University of Houston, Houston, TX
1972-1974	Postdoctoral Fellow (National Institutes of Health), Department of Biochemistry and Pharmacology, Tufts University School of Medicine, Boston
1971-1972	Postdoctoral Fellow (American Cancer Society), McArdle Laboratory for Cancer Research, University of Wisconsin, Madison
1971	Teacher, Children's School of Science, Woods Hole, MA
1968-1971	Predoctoral Fellow (National Institutes of Health and National Science Foundation), Department of Zoology, University of Iowa, Iowa City

AWARDS, HONORS AND MEMBERSHIPS

Research Prize of the Karst Waters Institute (2010)
 Fellow of the Linnean Society of London (Elected 2008)
 Distinguished Lecturer, National Science Foundation (2007)
 Frederick and Betsy Bang Fellow, Marine Biological Laboratory, Woods Hole (2006)
 Laura and Arthur Colwin Fellow, Marine Biological Laboratory, Woods Hole (2005, 2006)
 Alfred Fessard Distinguished Lecturer, CNRS, Gif-sur-Yvette, France (2005)
 Member, Biology Faculty of 1000 (2004)
 President, Society for Developmental Biology (1995-1996)
 Fellow of the American Association for the Advancement of Science (Elected 1992)
 Johann Fredrich Meischer Regent's Professor of Molecular Biology, University of Texas at Austin (1987-1990)
 Christianna Smith Distinguished Lecturer, Mt. Holyoke College (1995)
 Distinguished Lecturer in Zoology, Duke University (1994)
 Distinguished Lecturer, University of Kyoto, Japan (1992, 1994)
 American Society of Zoologists Outstanding Service Award (1990)
 Outstanding Graduate Teaching Award, University of Texas at Austin (1984)
 E.E. Just Centennial Lecturer, Marine Biological Laboratory, Woods Hole, MA (1983)
 Member of the Corporation, Marine Biological Laboratory, Woods Hole, MA (1975-present)
 Steps Toward Independence Fellow, Marine Biological Laboratory, Woods Hole, MA (1975)
 NATO Fellow in Molecular Biology (1972)
 American Cancer Society Post-doctoral Fellow, University of Wisconsin (1971-1972)
 Society for Sigma Xi (Full Member, 1971)
 National Institutes of Health Predoctoral Trainee in Fertilization and Gamete Physiology, Marine Biological Laboratory, Woods Hole, MA (1968)
 National Science Foundation Predoctoral Trainee, University of Iowa (1967-1968)

OUTREACH (Selected Examples)

TV Newscast (Seattle, WA) and Austin (TX): Blind Cavefish and the Fight for Sight
 NPR (Radio) Panest: Comments of the Life and Work of Stephen J. Gould (2002)
 Mentoring Award, Thomas Jefferson High School, Fairfax, VA (2003)
 Article discussing blind cavefish evolution and the loss of eyes, Muse: A Magazine for Gifted Children

Articles describing research in National Geographic Magazine, Natural History Magazine, The New York Times and other newspapers worldwide

PROFESSIONAL SOCIETY MEMBERSHIPS

Society for Developmental Biology (Board of Trustees, 1986-1990, 1994-1997; President, 1995-1996)

American Association for the Advancement of Science (Fellow, 1993-present)

American Society for Cell Biology (1970-present)

American Society of Zoologists (Chairman, Cell and Developmental Biology Section, 1988-90)

EDITORSHIPS AND EDITORIAL BOARDS

Research and Reports in Biology, Editorial Board, 2010-present

EvoDevo, Editorial Board, 2009-present

Brain and Eye, 2009-present

Molecular Biology and Evolution, Associate Editor, 2000-present

International Review of Molecular and Cellular Biology Editorial Board, 1999-present

Seminars in Cell and Developmental Biology, 1988-present

Biology Image Library (BioMed Central), Editorial Board, 2008-present

Development, 1986-1998

Molecular Reproduction and Development, 1994-2008

International Journal of Developmental Biology, 1989-present, Editor for North America, 2002-2007.

Zygote: Editor for North America, 1992-1996; Editorial Board, 1997-2006

Development, 1986-1998

Acta Embryologia Exp. Morph. 1989-1991

Biological Bulletin, 1985-1989

Cell Motility and the Cytoskeleton, 1985-1986

PROFESSIONAL AND PUBLIC SERVICE

Instructor, Frontiers in Stem Cells and Regeneration Course, Marine Biological Laboratory, Woods Hole, MA 02543 (2010, 2011, 2012)

Ad Hoc Member, National Institutes of Health, Developmental Biology Study Section (2010)

Chair, Committee for Review of Biology Graduate Program, Syracuse University (2010)

Co-Organizer, AIM 2009 and AIM 2011, Astyanax International Meetings, Ciudad Valles, Mexico

Search Committee Member, National Science Foundation, Integrative Biology Directorate (2008)

Ad Hoc Member, National Institutes of Health, Anterior Eye Diseases Study Section (2008) (2009)

Advisor, Grass Foundation Fellows, MBL, Woods Hole, 2007

Member, Special Panel, Comparative Genetics of Birth Defects, NIH-NICHD (2004)

Faculty of 1000

Ad Hoc Member, Council, National Institute of Child Health and Human Development (2001)

Scientific Advisory Board, University of Florida, School of Medicine, Whitney Marine Laboratory, (1996-2001; Chairman, 2001)

Finnish Academy of Science, Review Board for Centres of Excellence in Molecular, Cellular and Developmental Biology (2001, 2004)

Ad Hoc Member, National Institutes of Health, Cell Biology Study Section (1999)

Member, National Science Foundation Developmental Mechanisms Panel (1998)

Board of Review, Research Fellowships in Evolutionary Developmental Biology, Marine

Biological Laboratory, Woods Hole, MA (1998, 1999, 2000)
 Member, External Review Committee, Developmental Biology Center, University of California, Irvine (1991, 1998)
 Member, National Science Foundation Population Biology Panel (1998)
 Ad Hoc Member, National Institutes of Health Comparative Medicine Study Section (1998)
 Reviewer, Fellowships in Evolutionary Developmental Biology, Marine Biological Laboratory, Woods Hole (1998)
 President, Society for Developmental Biology (1995-1996)
 Committee to Advise the President (Biological Sciences), Harvard University, Cambridge, MA (1994)
 Member, National Science Foundation/Sloan Foundation, Molecular Evolution Review Panel (1994-1996)
 Organizer, Society for Developmental Biology Meetings, Vanderbilt University, Nashville, TN (1996)
 Organizer, NSF Conference on Evolution of Development: Molecules, Mechanisms, and Phylogenetics, Bodega Marine Laboratory, University of California, Davis, Bodega Bay, CA (1995)
 Co-organizer, West Coast Developmental Biology Meetings (1994)
 Member, National Science Foundation, Developmental Mechanisms Review Panel (1988-1993)
 Chairman, Section of Cell and Developmental Biology, American Society of Zoologists (1989-1990)
 Member, National Institutes of Health, Molecular Biology Study Section (1982-1986)
 Member, Board of Trustees, Society for Developmental Biology (1986-1989; 1994-1997)
 Nominating Committee, American Society for Cell Biology (1986)
 Member, Special Study Section to Review Distinguished Investigators, National Cancer Institute (1985)
 Member, National Academy of Science Committee on Animal Model Systems in Development (1984)
 Ad Hoc Reviewer, Molecular Biology Study Section, National Institutes of Health (1979) (1980) (1982)
 Selection Committee Chairman, Best Paper Awards, American Society of Zoologists Meetings (1981)

INVITED SEMINAR AND SYMPOSIUM LECTURES

- 2012 EuroEvoDevo Symposium on Extreme Environments, Lisbon (lecture), Vision Gordon Research Conference (lecture), American Society for Aging Meeting, Symposium of New Models Systems, Ft. Worth, TX (lecture), Subterranean Biology Symposium, Košice, Slovakia (lecture).
- 2011 Hopkins Marine Station, Stanford University (seminar), AIM 2011, Ciudad Vales, Mexico (lecture), Department of Molecular and Cellular Biology, Cornell University (seminar), Frontiers in Stem Cells and Regeneration Course, Marine Biological Laboratory, Woods Hole; Ruđer Bošković Institute, Zagreb, Croatia (seminar), Croatian Biogeological Society 15th Anniversary Lecture.
- 2010 Frontiers in Stem Cells and Regeneration Course, Marine Biological Laboratory, Woods Hole, 2010 Karst Waters Institute Research Award Lecture, Baltimore; Plenary Lecture, Mid-Atlantic Region Developmental Biology Meeting, Baltimore; Invited Speaker, Patterns of Nervous System Development, Minerve, France, Invited Seminar, Institute of Neuroscience, CNRS, Gif-sur-Yvette, France.
- 2009 Graduate Masters Course, Center for Genes, Development, and Cancer, University of Utrecht, The Netherlands, AIBS/NESCENT Symposium, Denver Colorado (Plenary Speaker), Department of Zoology, University of Oklahoma (Seminar), Experimental

- Biology 2009, New Orleans (Plenary Speaker), Society for Developmental Biology Meeting, San Francisco (Plenary Speaker, President's Symposium); AIM 2009, Ciudad Vales, Mexico (lecture), Fifth International Tunicate Meeting, Okinawa, Japan (Plenary Lecture).
- 2008 ARVO Symposium (Plenary Lecture), Ft. Lauderdale, FL; Symposium on Craniofacial Development and the Nervous System, Les Trielles, France; Neuroethology Gordon Conference (Invited speaker), Oxford, UK; EuroEvoDevo Meeting, Symposium on Stem Cells and Development (Invited Lecture), Ghent, Belgium; XXth Congress of the Zoological Society (Plenary Lecture), Paris, France; Ecological Genomic Symposium (Plenary Lecture), Kansas City; International Biospeleology Symposium (Plenary Lecture), Perth, Australia., Department of Molecular and Cellular Biology, University of Arizona (Seminar).
- 2007 National Science Foundation Biology Directorate (Distinguished Lecture), University of Virginia (Seminar), Dartmouth Medical School (Seminar); New Horizons in Evolutionary Biology International Conference (Plenary Lecture), Haifa, Israel; Workshop on "From Sensory Perception to Motor Output: Genetic Basis of Behaviour in the Zebrafish Embryo", Minerve, France (Lecture and Chairship), Fifth European Conference on Comparative Neurology (Evolution and Generation of Novelties in the Nervous System), Paris, France (Plenary Lecture); Workshop on "Future Directions in Karst Research", San Antonio, TX., International Tunicate Meeting, Villefranche-sur-Mer, France (Lecture and Chairship); Symposium on Fish Sensory Systems, Shanghai, China.
- 2006 University of Colorado, Boulder (seminar); Wayne State University, Detroit (seminar); University of Ljubljana, Slovenia; Warrington Science Presentation, Shenandoah University, XVIII International Biospeleology Symposium (Plenary Lecture), Cluj, Romania, EuroEvoDevo Inaugural Meeting, Prague, Czech Republic.
- 2005 Conference in Neurobiology Ladislav Tauc (On the Growth and Forms of Neural Systems), Gif-sur-Yvette, France; Johns Hopkins University School of Medicine, Developmental Basis of Evolutionary Change Conference, University of Chicago; Alfred Fessard Distinguished Lecture, Gif-sur-Yvette, France; University of Paris XI, Orsay, France; University College, London, UK; Insitut Jacques Monod, Paris, France; Gordon Conference on Evolutionary and Ecological Functional Genomics, Oxford, UK; Symposium on Visual Function-Insights From the Revolution in Biology at the Molecular Level, Tel Aviv, Israel; 14th International Congress of Speleology, Athens, Greece; Grass Fellow's Lecture, Marine Biological laboratory, Woods Hole; Fellow's Symposium, Marine Biological Laboratory, Woods Hole
- 2004 XVII International Biospeleology Symposium (Plenary Lecture), Raipur, India; University of Paris VI, Paris, France; Embryology Course, MBL, Woods Hole; Washington University, St. Louis; Cold Spring Harbor Meeting on Evolution of Developmental Diversity; Genomes and Evolution Meeting 2004 at Penn State University; Visual System Development Gordon Conference (Session Chair): Society for Developmental Biology Meeting (Plenary Talk), Calgary.
- 2003 Thomas Jefferson University, University of Kentucky, Society for Integrative and Comparative Biology Symposium on Visual Development and Evolution, Toronto. Symposium on Hypgean Fishes, Manaus, Brazil, First International Urochordate Meeting, Marseilles, France, George Washington University, Howard University.
- 2002 Harvard Medical School; Brigham Young University; Association for Research in Vision and Ophthalmology Symposium on Ocular Morphogenesis, Ft. Lauderdale, FL, Symposium of Biology on Karst Environments, University of Florida, Gainesville, FL., Baylor College of Medicine, University of Cincinnati
- 2001 Sars Institute for Marine Molecular Biology, Bergen, Norway; CNRS, Gif-sur-Yvette, France, National Eye Institute, Bethesda; Center for Marine Biotechnology, University of

- Maryland, Baltimore; Southeast Louisiana University; NATO Conference on Comparative Developmental Biology, Naples, Italy; University of Iowa; International Symposium of Biospeleology, Ribeira, Brazil.
- 2000 New York University, University of Iowa; Zebrafish Genetics and Development, Cold Spring Harbor Laboratory.
- 1999 Station Zoologique, Villefranche sur Mer, France; Department of Embryology, Carnegie Institution of Washington; University of Maryland, Baltimore Co; Marshall University School of Medicine; ICRO/UNESCO Course on Genes and Development, University of Puerto Rico, San Juan, P.R.
- 1998 National Institutes of Health, Bethesda; University of Pennsylvania; University of Virginia; University of Maryland, College Park; Molecular Evolution Gordon Conference; British Society of Developmental Biology symposium on Development of Sensory Organs, Sussex, England
- 1997 Columbia University; Abo Academi University, Turko, Finland; Yale University; State University of New York at Stonybrook; University of New Hampshire; Brown University; Developmental Biology Gordon Conference; Embryology Course, MBL, Woods Hole; N.E. Regional Developmental Biology Meeting, Woods Hole; Union of Italian Zoologists, Cattolica, Italy
- 1996 University of Florida; Indiana University; University of California, Berkeley; Arizona State University; Pennsylvania State University; Vanderbilt University, School of Medicine; University of Illinois; University of California, Santa Cruz; EMBO Workshop on Myogenesis and Molecular Genetic Mechanisms of Neuromuscular Diseases, Ein Gedi, Israel; EMBO Workshop on Comparative Developmental Biology, Ischia, Italy; Memorial Symposium honoring Professor Daniel Mazia, Hopkins Marine Station, Stanford University; Symposium on Evolution of Developmental Mechanisms, Society of Comparative and Integrative Biology Meetings, Albuquerque, NM
- 1995 University of Texas at Austin; University of Perugia, Italy; Stazione Zoologica, Naples, Italy; Worcester Foundation, Shrewsbury, MA; Mount Holyoke College; Howard Hughes Foundation Summer Institute, Vanderbilt University; Symposium on Development and Evolution of Animal Body Plans, American Society of Zoologists, St. Louis, MO; Society for Developmental Biology Symposium, San Diego, CA; Biotechnology Symposium, Havana, Cuba; Symposium on Origin of the Craniates, Society for Vertebrate Paleontology, Pittsburgh, PA; American Society of Cell Biology Symposium on Localization of Determination in the Embryo, Washington, D.C.
- 1994 Kyoto University, Japan; Tokyo Institute of Technology, Japan; Duke University
- 1993 University of Texas Southwestern Medical School; University of Texas at Austin; University of California, Irvine; University of Southern California School of Medicine; Specialized Functions of the Cytoskeleton Symposium, American Society for Cell Biology Meetings, Washington, DC; European Cytoskeletal Forum, Assisi, Italy; UNESCO International Training Laboratory Course, Imaging the Cell in Development and Reproduction, Coquimbo, Chile; Developmental Biology of Marine Organisms Symposium, Plymouth, England
- 1992 Kyoto University, Japan; Marquette University; University of Chicago; Stazione Zoologica, Naples, Italy; West Coast Regional Developmental Biology Meeting, Lake Tahoe, CA; Symposium on Conserved Genes and Developmental Mechanisms in Embryos of Divergent Species, Vancouver, Canada; British Society of Developmental Biology Meetings, Sussex, U.K.; Keynote Speaker at Southeast Regional Developmental Biology Meetings, Clemson, SC; UNESCO International Cell Research Organization Training Course, Novel Biological Model Systems for Research in Developmental Biology and Neurobiology, University of

- Puerto Rico; Workshop on the Cytoskeleton and Embryogenesis, International Cell Biology Meeting, Madrid, Spain
- 1991 Stanford University; University of California, Berkeley; Arizona State University; Carlton University, Canada; US-Japan Symposium on Molecular Biology of Marine Invertebrate Development, Honolulu
- 1990 University of California, San Francisco, School of Medicine; University of Puerto Rico, University College, Cayey; Conference on Gastrulation: Movements, Patterns and Molecules, Bodega Marine Laboratory, University of California, Davis; Plenary Lecture at 23rd Italian Zoological Society Meeting, Palermo, Italy; EMBO Course on *In Situ* Hybridization in the Mouse, Institut Pasteur, Paris, France; Course in Cell and Molecular Biology of Early Development, Hopkins Marine Station, Stanford University; Boston Colloquium for Philosophy of Science: Symposium on Organisms and the Origin of Self, Boston
- 1989 University of Colorado, Boulder; University of Calgary, School of Medicine, Canada; Institut Pasteur, Paris, France; University of Texas Southwestern Medical School; University of Hawaii at Manoa; NATO Advanced Research Workshop on Mechanisms of Fertilization: Plants to Humans, Sorrento, Italy; NATO Course on Experimental Embryology in Aquatic Plant and Animal Organisms, Banyuls, France; Symposium on Pattern Formation in Invertebrates and Lower Eukaryotes, International Congress of Developmental Biologists, Utrecht, The Netherlands; Keynote Speaker, Northwest Regional Developmental Biology Meeting, Friday Harbor Laboratories; Southwest Developmental Biology Meeting, Ft. Worth, TX
- 1988 Vanderbilt University; University of Connecticut School of Medicine; Texas Tech University School of Medicine; University of Calgary, School of Medicine, Canada; Molecular Embryology of the Mouse Course, Cold Spring Harbor Laboratory; NICHD Workshop on The Role of Cytoplasmic Determinants in Development, Leesburg, VA; NSF Course on Microinjection in Biology, Marine Biological Laboratory, Woods Hole, MA; Japan-USA Meeting on Developmental Biology of Ascidians, Aomori, Japan
- 1987 Duke University School of Medicine; University of Washington; University of North Carolina, Chapel Hill; Syracuse University; University of Illinois, Chicago; Worcester Foundation for Experimental Biology; University of Massachusetts, Amherst; McGill University, Canada; UCLA-Miami Winter Symposium on Advances in Gene Technology: The Molecular Biology of Development, Miami, FL; UCLA Symposium on the Molecular Biology of Invertebrate Development, Park City, UT; Canadian Society of Developmental Biology Symposium, Winnipeg, Canada; Chile-USA Cooperative Symposium on the Cytoskeleton in Development, Santiago, Chile; Plenary Lecture, Midwest Molecular Biology Meeting, Oklahoma City, OK
- 1986 Harvard University; University of Wisconsin, Madison; Baylor College of Medicine; University of California, Irvine; University of California, San Diego; Whitney Marine Laboratory, University of Florida; Fourth International Symposium on Invertebrate Reproduction, Lille, France; British Society for Developmental Biology Symposium on Analysis of Gene Expression in Development by Transfer of Macromolecules, Norwich, U.K.
- 1985 University of Texas at Austin; University of Utrecht, Utrecht, The Netherlands; Max Planck Institute for Developmental Biology, Tübingen, Germany; University of Texas Marine Science Institute, Port Aransas, TX; University of Pennsylvania; University of Illinois, Urbana; Plenary Lecture at West Coast Society for Developmental Biology Meeting, Asilomar, CA; Session Chairman at General Scientific Meetings, Marine Biological Laboratory, Woods Hole; Gordon Conference on Fertilization and the Activation of

- Development, Holderness School, Plymouth, NH; Symposium on Patterning in Embryonic Development, Society of Anatomists, Toronto, Canada
- 1984 Hubrecht Laboratory, Utrecht, The Netherlands; Rensselaer Polytechnic University; National Academy of Sciences Committee on Animal Model Systems in Development; EMBO Course on Gene Expression and Microinjection, University of Warwick, Coventry, England; UCLA-Cetus Foundation Symposium on Molecular and Cellular Biology, Molecular Biology of Development, Steamboat Springs, Colorado; Session Chairperson and Speaker at Southwest Regional Developmental Biology Meeting, Texas A&M University; Symposium to Honor the Centennial of E.E. Just, Marine Biological Laboratory, Woods Hole; Belle Baruch Marine Institute, University of South Carolina; Symposium on Cell Asymmetry and Development, European Congress of Developmental Biology, Southampton, England
- 1983 Friday Evening Lecture, Marine Biological Laboratory, Woods Hole; University of California, Irvine, CA; University of California, Berkeley (twice); University of California, Davis; Brandeis University; Stanford University; University of Texas, Southwestern Medical School; Gordon Research Conference on Fertilization and the Activation of Development, Holderness School, Plymouth, NH; Chairperson and Speaker at Southwest Regional Developmental Biology Meeting, University of Texas at Arlington, TX
- 1982 University of Iowa; Texas A&M University; Embryology Course, Marine Biological Laboratory, Woods Hole; University of Calgary, School of Medicine, Canada; Symposium on the Molecular Basis of Early Development, American Society of Zoologists, Louisville, KY; Symposium on Ribosomes and Translational Level Control Mechanisms, Canadian Society of Biochemists, St. Johns, Canada
- 1981 Purdue University; Indiana University; Scripps Institute of Oceanography; Case Western Reserve University, School of Medicine; Rice University; University of Houston Invited Symposium and Meeting Lectures: Symposium on the Developmental Biology of Ascidians, American Society of Zoology, Dallas, TX; Gordon Research Conference on Fertilization and the Activation of Development, Holderness School, NH; Symposium on Cancer and the Control of Early Embryonic Development, Marine Biological Laboratory, Woods Hole; Keynote Lecture at Midwest Regional Developmental Biology Meeting, Ohio State University; Instructor, Embryology Course, Marine Biological Laboratory, Woods Hole
- 1980 University of Texas at Austin (twice); Symposium on Pattern Formation in Development, American Society of Zoologists, Seattle; Instructor, Embryology Course, Marine Biological Laboratory, Woods Hole; Workshop on the Formation of Messenger RNA in Eukaryotic Cells, EMBO/Swiss Academy of Science, Arolla, Switzerland; EMBO Symposium on Messenger RNA and Messenger RNA-Protein complexes, Hapert, The Netherlands
- 1977 Indiana University of School of Medicine; Kansas State University; Iowa State University; University of Texas at Austin
- 1976 Rice University, University of Illinois, School of Medicine, Chicago, University of Texas at Austin
- 1974 University of Kansas, Lawrence; University of Iowa; DePaul University; State University of New York at Albany; University of Houston; Oakland University; Florida International University
- 1973 Harvard Medical School

INSTITUTIONAL TEACHING ACTIVITIES

Undergraduate

- General Biochemistry (UH)
- Developmental Biology (UT) (UM)
- Cell Biology (UT)
- Biology of the Protozoa (with laboratory) (UT)

Human Physiology (UT)
 Advanced Developmental Biology (UC)
 Developmental Biology of Marine Invertebrates (with laboratory) (UC)
 The Triumph of the Embryo (Honors Seminar) (UM)
 Experimental Developmental Biology (UM)
 Organismal Biology (UM)

Graduate

Biochemistry of Development (UH)
 Advanced Cell Biology (UT)
 Molecular Analysis of Development (UT)
 Graduate Survey of Development (UT)
 Techniques in Developmental Biology (laboratory) (UT)
 Molecular Mechanisms in Animal Development (UC)
 Animal Developmental Biology (UM)

UH = University of Houston (1974-1977)
 UT = University of Texas at Austin (1977-1990)
 UC = University of California, Davis (1990-1996)
 UM = University of Maryland (1999-present)

FORMER AND CURRENT GRADUATE STUDENTS

Ph.D. Students

David S. Adams (1979), Professor of Biological Sciences, Worcester Polytechnic Institute
 David G. Capco (1980), Professor of Life Sciences, Arizona State University
 Daniel Noonan (1980), Professor of Biochemistry, University of Kentucky
 Craig R. Tomlinson (1984) Professor of Medicine and of Pharmacology and Toxicology, Dartmouth
 Medical School
 William R. Bates (1985), Professor of Zoology, University of British Columbia
 Elisabeth Buchanan (1988), present position unknown
 Mary E. White (1989), Professor of Biological Sciences, Southeast Louisiana University
 Ronald Conlon (1990), Associate Professor of Genetics, Case Western Reserve University, School
 of Medicine
 Rebecca Beach (1990), Associate Professor of Biology, Hollins College, Roanoke, VA.
 Catherine Olsen (1998), Research Scientist, Lawrence Berkeley Laboratory, Berkeley, CA.
 Allen Strickler (2006), Medical Student, University of Virginia
 Bonnie Jacques (Co-chair) (2009), Post-doctoral Student, UC-San Diego

7 MS degrees have also been awarded under my supervision

PREVIOUS AND CURRENT POSTDOCTORAL STUDENTS

James A. Uzman (1983-1986), Associate Professor of Biology, University of Houston
 Douglas Drummond (1985-1986), Senior Researcher, University of Warwick
 Fred Harrington (1986-1989), Research Associate, University of Pittsburgh
 Judith Venuti (1986-1989), Associate Professor of Anatomy and Cell Biology, Louisiana State University, School of Medicine, Program Officer NSF
 Kazuhiro Makabe (1990-1991), Professor of Biology, Tushima University, Japan
 Takato Nishikata (1990-1991), Professor of Biology, Konan University, Japan
 Billie Swalla (1988-1992), Professor of Biology, University of Washington
 Jing Zhou (1992-1993), Research Associate, Vanderbilt University, School of Medicine
 Takehiro Kusakabe (1994-1996), Professor of Biological Sciences, Konan University, Japan
 David McCauley (1997-1999), Assistant Professor of Zoology, University of Oklahoma
 Liang Feng (1999-2001), Postdoctoral Fellow, University of Rochester, School of Medicine
 Luis Espinasa (2002-2003), Associate Professor of Biology, Marist University, N. Y.
 Yoshiyuki Yamamoto (1998-2003), Lecturer, University College London, UK
 Daphne Soares (2003-2005), Assistant Professor of Biology, University of Maryland
 Lane Law (2004-2006), Research Scientist, Department of Defense
 Edmund Rodgers (2007-2008), Research Scientist, Georgia State University
 Spela Goricki (2007-2012), Researcher, Slovenian Academy of Science
 Masato Yoshizawa (2005-present)
 Ma Li (2010-present)
 Kelly O'Quin (2011-present)

CURRENT GRANT SUPPORT

National Institutes of Health (2008-2013), **Regulation of Eye Growth and Development by the Lens**, \$2,283,363 (total costs).
 National Institutes of Health (2010-2012). **Recovery Act Stimulus Supplement to Regulation of Eye Growth and Development by the Lens**, \$182,580 (total costs)
 National Science Foundation (2006-2012), **Evolution of Eye Degeneration in Cavefish**, \$680,000 (total costs). **Including a Special Creativity Supplement (2010-2012)**.
 National Institutes of Health (2010-2015). **The Tunicate Ciona: A New Model for the Effects of Aging on Tissue Regeneration**. \$1,861,987 (total costs).

PREVIOUS GRANT SUPPORT SUMMARY

1975-1977, American Cancer Society, \$150,000 (Direct Funding)
 1975-1977, National Institutes of Health, \$213,678 (Direct Funding)
 1976-1978, National Science Foundation, \$110,000 (Total Funding)
 1978-1980, American Cancer Society, \$150,000 (Direct Funding)
 1979-1981, National Institutes of Health, \$324,880 (Direct Funding)
 1980-1982, Muscular Dystrophy Association, \$60,000 (Total Funding)
 1982-1987, National Institutes of Health, \$410,000 (Total Funding)
 1981-1983, National Institutes of Health, \$287,560 (Total Funding)
 1982-1984, Muscular Dystrophy Association, \$66,000 (Total Funding)
 1983-1986, National Science Foundation, \$150,000 (Direct Funding)
 1983-1988, National Institutes of Health, \$724,850 (Total Funding)
 1986-1988, National Science Foundation, \$240,000 (Total Funding)
 1988-1991, National Institutes of Health, \$601,545 (Total Funding)

1990-1992, National Science Foundation, \$250,000 (Total Funding)
 1990-1992, National Science Foundation Facilities Grant, \$325,000 (Total Funding)
 1991-1995, National Science Foundation, \$375,000 (Total Funding)
 1991-1996, National Institutes of Health, \$770,030 (Total Funding)
 1994-1998, National Science Foundation, \$395,000 (Total Funding)
 1997-2001, National Science Foundation, \$330,000 (Total Funding)
 1999-2003, National Institutes of Health, \$1,367,00 (Total Funding)
 2000-2003, National Science Foundation, \$395,000 (Total Funding)
 2001-2004 National Science Foundation \$330,000 (Total Funding)
 2003-2006 National Sciences Foundation \$420,000 (Total Funding)
 2003-2008 National Institutes of Health \$1,465,727 (Total Funding)
 2006-2010 National Science Foundation \$420,000 (Total Funding)

INSTITUTIONAL GRANTS

2002- 2007, National Institutes of Health, Training Grant in Neuroethology, University of Maryland
 1990-1992, National Science Foundation, A Molecular Biology Facility for the Bodega Marine
 Laboratory, University of California, Davis
 1989, National Institutes of Health Training Grant in Developmental Biology, University of Texas at
 Austin
 1983-1987, Director, National Institutes of Health, Training Grant in Embryology, Marine
 Biological Laboratory, Woods Hole
 1977-1981, National Institutes of Health, Training Grant in Genetics, University of Texas at
 Austin

PUBLICATIONS

- Jeffery, W. R.** (2012). Siphon regeneration capacity is compromised during aging in the
 ascidian *Ciona intestinalis*. ***Mech. Aging Dev.*** (in revision).
- Joachim, B. L., Riesch, R., **Jeffery, W. R.**, and I. Schlupp (2012). The effect of skylights on
 pigment cell retention in cavernicolous populations of a livebearing fish (*Poecilia
 mexicana*). ***J. Fish Biol.*** (in revision).
191. Gallo, N. D, and **W. R. Jeffery** (2012). Evolution of space dependent growth in the teleost
Astyanax mexicanus. ***PLoS ONE*** 7(8) e41443. Doi:10.1371/journal.pone.0041413.
190. Yoshizawa, M., Ashida, G., and **W. R. Jeffery** (2012). Parental genetic effects in a cavefish
 adaptive behavior explain disparity in nuclear and mitochondrial DNA. ***Evolution***
 doi:10.5061/dryad.qn514810
189. Bilandžija, H., Četković, H., and **W. R. Jeffery** (2012). Evolution of albinism in cave
 planthoppers by a convergent defect in the first step of the melanin biosynthesis pathway.
Evol. Dev. 14: 196-203.
188. Protas, M. and **W. R. Jeffery** (2012). Evolution and development of cave animals: From fish
 to crustaceans. ***WIREs Developmental Biology***. doi: 10.1002/wdev.61
187. **Jeffery, W. R.** (2011). *Astyanax mexicanus*: A model organism for evolution and

- adaptation. In: Encyclopedia of Caves. Culver, D. C., and W. B. White, eds. Elsevier Press: New York. (in press).
186. Yoshizawa, M, and **W. R. Jeffery** (2011). Evolutionary tuning of behavior requires enhancement of the neuromast sensory system. *Commun. Integr. Biol.* 4: 89-91.
185. Yamamoto, Y., and **W. R. Jeffery** (2011). Blind cavefish. In: *Encyclopedia of Fish Physiology: From Genome to Environment*. A. P. Farrell, ed. Academic Press: New York. (in press).
184. Yoshizawa, M., Goricki, S., Soares, D., and **W. R. Jeffery** (2010). Evolution of a behavioral shift mediated by superficial neuromasts helps cavefish find food in darkness. *Curr. Biol.* 20: 1631-1636.
183. **Jeffery, W. R.** (2010). Pleiotropy and eye degeneration in cavefish. *Heredity* 105: 495-496.
182. **Jeffery, W. R.** (2010). Adapting to the dark side: a review of *Cave Biology: Life in Darkness*, by Aldemaro Romero. *Evol. Dev.* 12: 343-344.
181. **Jeffery, W.R.**, and A.G. Strickler (2010). Development as an evolutionary process in *Astyanax* cavefish. In: *The Biology of Subterranean Fishes*. E. Trajano, ed. Academic Press: New York.
180. Auger, H., Sasakura, Y., Joly, J-S., and **W. R. Jeffery** (2010). Regeneration of oral siphon pigment organs in the ascidian *Ciona intestinalis*. *Develop. Biol.* 339: 374-389.
179. **Jeffery, W. R.** (2009) Regressive evolution in *Astyanax* cavefish. *Annu. Rev. Genet* 43: 25-47.
178. Yamamoto, Y., Byerly, M. S., Jackman, W. R., and **W. R. Jeffery** (2009). Pleiotropic functions of embryonic sonic hedgehog expression link jaw and taste bud amplification with eye loss during cavefish evolution. *Develop. Biol.* 330: 200-211
177. **Jeffery, W. R.** (2009). Preface to Current Topics in Developmental Biology 86: xi-xii.
176. **Jeffery, W.R.** (2009). *Evolution and Development*. Volume 86. *Current Topics in Developmental Biology*. Elsevier: New York.
175. **Jeffery, W.R.** (2009). Evolution and development in the cavefish *Astyanax*. *Curr. Top. Dev. Biol.* 86: 191-221.
174. Strickler, A.G., and **W.R. Jeffery** (2009). Differentially expressed genes identified by cross species microarray in the blind cavefish *Astyanax*. *Int. Zool.* 4, 31-40.
173. Porter, M., Dittmar, K., Hutchins, B., **Jeffery, W. R.**, Lefebure, T., Paquin, P. , and M. Protas (2008). Understanding the tempo and mode of evolution: Cave adaptation as a model system. In *Frontiers in Karst Research*, J. Martin and W. B. White, eds. pp 100-106. Karst Water Institute Press
172. Gross, J. B., Protas, M., Conrad, M., Scheid, P. E., Vidal, O., **Jeffery, W. R.**, Borowsky, R., and C. J. Tabin (2008). Synteny and candidate gene prediction using an anchored linkage

- map of *Astyanax mexicanus*. *Proc. Natl. Acad. Sci. USA* 105, 20106-20111.
171. **Jeffery, W.R.**, T. Chiba, F. Razy-Krajka, C. Deyts, N. Satoh, and J-S. Joly (2008). Trunk lateral cells are neural crest-like cells in the ascidian *Ciona intestinalis*: insights into the ancestry and evolution of the neural crest. *Develop. Biol.* 324, 152-160.
170. **Jeffery, W.R.** (2008). Emerging systems in Evo/Devo: cavefish and mechanisms of microevolution. *Evol. Dev.* 10: 265-272.
169. Yoshizawa, M., and **W.R. Jeffery** (2008). Shadow response in the blind cavefish *Astyanax* reveals conservation of a functional pineal eye. *J. Exp. Biol.* 211: 292-299.
168. Strickler, A.G., M.S. Byerly, and **W.R. Jeffery** (2007). Lens gene expression analysis reveals downregulation of the anti-apoptotic chaperone α A-crystallin during cavefish eye degeneration. *Dev. Genes Evol.* 217: 771-782.
167. Strickler, A.G., Y. Yamamoto, and **W.R. Jeffery** (2007). The lens controls cell survival in the retina: evidence from the blind cavefish *Astyanax*. *Develop. Biol.* 311: 512-523.
166. Alunni, A., A. Menuet, E. Candal, J-B. Penigault, **W.R. Jeffery**, and S. Retaux (2007). Developmental mechanisms for retinal degeneration in the blind cavefish *Astyanax mexicanus*. *J. Comp. Neurol.* 505: 221-233.
165. **Jeffery, W.R.** (2007). Chordate ancestry of the neural crest: new insights from ascidians. *Sem. Cell. Dev. Biol.* 18: 481-491.
164. Menuet, A., A. Alunni, J-S. Joly, **W.R. Jeffery**, and S. Retaux (2007). Shh overexpression in *Astyanax* cavefish: multiple consequences on forebrain development and evolution. *Development* 134: 845-855.
163. **Jeffery, W. R.** (2006). Neural crest-like cells in ascidians: Phylogenetic distribution, relationship to larval complexity, and pigment cell fate. *J. Exp. Zool. B (Mol. Dev. Evol.)* 306B: 470-480.
162. Protas, M.E., C. Hersey, D. Kochanek, Y. Zhou, H. Wilkens, **W.R. Jeffery**, L.I. Zon, R. Borowsky, and C.J. Tabin (2006). Genetic analysis of cavefish reveals molecular convergence in the evolution of albinism. *Nature Genetics* 38: 107-111.
161. **Jeffery, W.R.** (2006). Regressive evolution of pigmentation in the cavefish *Astyanax*. *Is. J. Evol. Ecol.* 52: 405-422.
160. Espinasa, L., and **W.R. Jeffery** (2006). Conservation of retinal circadian rhythms during cavefish eye degeneration. *Evol. Dev.* 8: 16-22.
159. **Jeffery, W. R.** (2005). Why are cave animals colorless? Mechanism of pigment cell regression in the cavefish *Astyanax*. *Proc. Int. Cong. Speleol.* 14, 185-187.
158. Espinasa, L., Y. Yamamoto, and **W.R. Jeffery** (2005). Non-optical releasers for aggressive behavior in blind *Astyanax* (Teleostei, Characidae). *Behav. Process.* 70: 144-148.
157. Evans, T.G., Y. Yamamoto, **W.R. Jeffery**, and P.H. Krone (2005). Zebrafish hsp70 is required

- for embryonic lens formation. *Cell Stress and Chaperones* 10: 66-78.
156. Kocher, T.D., **W.R. Jeffery**, D.M. Parichy, C.L. Peichel, J.T. Sreelman, and G.H. Thorgaard (2005). Fish models for studying adaptive evolution and speciation. *Zebrafish* 2: 147-156.
155. Vihtelic, T.S., Y. Yamamoto, S.S. Springer, **W.R. Jeffery**, and D.R. Hyde (2005). Lens opacity and photoreceptor degeneration in the zebrafish *lens opaque* mutant. *Dev. Dynam.* 233: 52-65.
154. Yamamoto, Y., and **W.R. Jeffery** (2005). Identification of neural crest-like cells in a urochordate embryo. *Exp. Medicine* 23: 399-402.
- 153 **Jeffery, W.R.** (2005). Evolution of cavefish eye degeneration: The return of pleiotropy. *Subterranean Biol.* 3: 1-11.
152. **Jeffery, W.R.** (2005). Adaptive evolution of eye degeneration in the Mexican blind cavefish. *J. Hered.* 96: 185-196.
151. Soares, D., Y. Yamamoto, A.G. Strickler, and **W.R. Jeffery** (2004). The lens has a specific influence on optic nerve and tectum development in the blind cavefish *Astyanax*. *Develop. Neuroscience* 26: 308-319.
150. **Jeffery, W.R.**, A.G. Strickler, and Y. Yamamoto (2004). Migratory neural crest-like cells form body pigmentation in a urochordate embryo. *Nature* 431: 696-699.
149. Yamamoto, Y., D.W. Stock, and **W.R. Jeffery** (2004). Hedgehog signalling controls eye degeneration in blind cavefish. *Nature* 431: 844-847.
148. McCauley, D.W., E. Hixon, and **W.R. Jeffery** (2004). Evolution of pigment cell regression in the cavefish *Astyanax*: A late step in melanogenesis. *Evol. Dev.* 6: 209-218.
- 147 **Jeffery, W.R.** (2004). Evolution and development of brain sensory organs in molgulid ascidians. *Evol. Dev.* 6: 170-179.
146. Hooven, T.A., Y. Yamamoto, and **W.R. Jeffery** (2004). Blind cavefish and heat shock protein chaperones: A novel role for hsp90 α in lens apoptosis. *Int. J. Dev. Biol.* 48: 731-738.
145. **Jeffery, W.R.**, A.G. Strickler, and Y. Yamamoto (2003). To see or not to see: evolution of eye degeneration in Mexican blind cave fish. *Int. Comp. Biol.* 43: 531-541.
144. Espinasa, L., and **W.R. Jeffery** (2003). A new troglomorphic sculpin fish population: geography, morphology and conservation status. *J. Cave Karst Studies* 65: 91-98.
143. Yamamoto, Y., L. Espinasa, D.W. Stock, and **W.R. Jeffery** (2003). Development and evolution of craniofacial patterning is mediated by eye-dependent and -independent processes in the cavefish *Astyanax*. *Evol. Dev.* 5: 435-446.
142. **Jeffery, W.R.** (2002). Eye degeneration and restoration in *Astyanax* cavefish. In *Karst Frontiers*, University of Florida Press, Gainesville.
141. Vihtelic, T.S., Y. Yamamoto, M.T. Sweeney, **W.R. Jeffery**, and D. Hyde (2002). Zebrafish

- lens mutants display arrest of lens differentiation and epithelial cell degeneration. *Develop. Dynam.* 222: 625-636.
140. **Jeffery, W.R.** (2002). Role of PCNA and ependymal cells in ascidian neural development. *Gene* 287: 97-105.
139. Strickler, A.G., K. Famuditimi, and **W.R. Jeffery** (2002). Retinal homeobox genes and the role of cell proliferation in cavefish eye degeneration. *Int. J. Dev. Biol.* 46: 285-294.
138. **Jeffery, W.R.** (2002). Programmed cell death in the ascidian embryo: Modulation by Fox5A and Manx and roles in the evolution of larval development. *Mech. Develop.* 118: 111-124.
137. Yamamoto, Y., and **W.R. Jeffery** (2002). Probing vertebrate eye development by lens transplantation. *Methods* 28: 420-426.
136. **Jeffery, W.R.** (2002). Eye development. In: McGraw-Hill Yearbook of Science and Technology 2002, McGraw-Hill, New York, pp 100-103.
135. Dowling, T.E., D.P. Martasian, and **W.R. Jeffery** (2002). Evidence for multiple genetic lineages with similar eyeless phenotypes in the blind cavefish, *Astyanax mexicanus*. *Mol. Biol. Evol.* 19: 446-455.
134. **Jeffery, W.R.** (2002). Ascidian gene expression profiles. *Genome Biol.* 3: 1030.1-1030.4
133. Strickler, A.G., Y. Yamamoto, and **W.R. Jeffery** (2001). Early and late changes in *Pax 6* expression accompany eye degeneration during cavefish development. *Dev. Genes Evol.* 211: 138-144.
132. **Jeffery, W.R.** (2001). Determinants of cell and positional fate in ascidian embryos. *Int. Rev. Cytol.* 203: 3-62.
131. **Jeffery, W.R.** (2001). Cavefish as a model system in evolutionary developmental biology. *Develop. Biol.* 231: 1-12.
130. **Jeffery, W.R.** (2000). Tunicates: Models for studies of chordate development and evolution at low genomic complexity. In: *Comparative Genomics*, M. Clark, ed. Kluwer Press. pp.1-53.
129. **Jeffery, W.R.**, A.G. Strickler, S. Guiney, D. Heyser, and S.I. Tomarev (2000). *Prox 1* in eye degeneration and sensory compensation during development and evolution of the cavefish *Astyanax*. *Dev. Genes. Evol.* 210: 223-230.
128. Yamamoto, Y, and **W.R. Jeffery** (2000). Central role for the lens in cave fish eye degeneration. *Science* 289: 631-633.
127. Olsen, C.L., J.E. Natzle, and **W.R. Jeffery** (1999). The *forkhead* gene *FHI* is involved in evolutionary modification of the ascidian tadpole larva. *Mech. Develop.* 85: 49-58.
126. **Jeffery, W.R.**, B.J. Swalla, N. Ewing, and T. Kusakabe (1999). Evolution of the anural ascidian larva: Evidence from embryos and molecules. *Mol. Biol. Evol.* 16: 646-654.
125. Swalla, B.J., M. Just, E. Pederson, and **W.R. Jeffery** (1999). A multigene locus containing the

- manx* and *bobcat* genes is required for development of chordate features in the ascidian tadpole larva. *Development* 126: 1643-1653.
124. **Jeffery, W.R.**, N. Ewing, J. Machula, C.L. Olsen, and B.J. Swalla (1998). Cytoskeletal actin genes function downstream of *HNF-3* in ascidian notochord development. *Int. J. Dev. Biol.* 42: 1085-1092.
 123. **Jeffery, W.R.**, and D.P. Martasian (1998). Evolution of eye regression in the cavefish *Astyanax*: Apoptosis and the *Pax-6* gene. *Amer. Zool.* 38: 685-696.
 122. Tagawa, K., N. Satoh, and **W.R. Jeffery** (1997). The newly described ascidian *Molgula tectiformis* is an anural developer. *Zool. Sci.* 14: 297-303.
 121. **Jeffery, W.R.**, and B.J. Swalla (1997). Embryology of the Tunicates. In: *Embryology: Constructing the Organism*. S. F. Gilbert and A. M. Raunio, Sinauer Associates, Sunderland, MA, pp. 331-364.
 120. Olsen, C.L., and **W.R. Jeffery** (1997). A forkhead gene related to *HNF-3* is required for gastrulation and axis formation in the ascidian embryo. *Development* 124: 3609-3619.
 119. Kusakabe, T., I. Araki, N. Satoh, and **W.R. Jeffery** (1997). Evolution of chordate actin genes: evidence from genomic organization and amino acid sequences. *J. Mol. Evol.* 44: 289-298.
 118. **Jeffery, W.R.** (1997). Evolution of ascidian development. *Bioscience* 47: 417-425.
 117. Swalla, B.J., and **W.R. Jeffery** (1996). Requirement of the *Manx* gene for restoration of ancestral chordate features in a tailless ascidian larva. *Science* 274: 1205-1208.
 116. Swalla, B.J., and **W.R. Jeffery** (1996). PCNA mRNA has a 3' UTR antisense to yellow crescent RNA and is localized in ascidian eggs and embryos. *Develop. Biol.* 178: 23-34.
 115. Kusakabe, T., B.J. Swalla, N. Satoh, and **W.R. Jeffery**. (1996). Mechanism of an evolutionary change in muscle cell differentiation in ascidians with different modes of development. *Develop. Biol.* 174: 379-392.
 114. Swalla, B.J., and **W.R. Jeffery** (1996). Localization of ribosomal protein L5 mRNA in myoplasm during ascidian development. *Develop. Genetics* 19: 258-267.
 113. Ma, L., B.J. Swalla, J. Zhou, S.L. Dobias, J.R. Bell, J. Chen, R.E. Maxson, and **W.R. Jeffery** (1996). Expression of an *Msx* homeobox gene in ascidians: insights into the archetypal chordate expression pattern. *Develop. Dynamics* 205: 308-318.
 112. Speaksnijder, J. E., McDougall, A., Sardet, C., Gualtieri, R. **Jeffery, W. R.**, Berridge, M. J., Williams, R. J. P., Thomas, A. P., and J. W. Putnam. 1995. Calcium signaling and localization of endoplasmic reticulum in ascidian embryos. In: Calcium waves, gradients, and oscillations. G. R. Bock and K. Ackrill Eds. Wiley, West Sussex, UK, pp 141-145.
 111. Hadfield, K.A., B.J. Swalla, and **W.R. Jeffery** (1995). Multiple origins of anural development in ascidians inferred from rDNA sequences. *J. Mol. Evol.* 40: 413-427.
 110. **Jeffery, W.R.** (1995). John Philip Trinkaus: First recipient of the Edwin Grant Conklin Medal

- in Developmental Biology. *Develop. Biol.* 172: 1.
109. **Jeffery, W.R.** (1995). Development and evolution of an egg cytoskeletal domain in ascidians. *Curr. Topics Develop. Biol.* 31: 243-276.
 108. Satoh, N., and **W.R. Jeffery** (1995). Chasing tails in ascidians: developmental insights into the origin and evolution of chordates. *Trends in Genetics* 11: 354-359.
 107. **Jeffery, W.R.** (1995). Ascidians step forward and identify themselves! *Bioessays* 17: 369-370.
 106. Swalla, B.J., and **W.R. Jeffery** (1995). A maternal RNA localized in the yellow crescent is segregated to the larval muscle cells during ascidian development. *Develop. Biol.* 170: 353-364.
 105. Swalla, B.J., M.E. White, J. Zhou, and **W.R. Jeffery** (1994). Heterochronic expression of an adult muscle actin gene during ascidian larval development. *Develop. Genetics* 15: 51-63.
 104. **Jeffery, W.R.** (1994). Actin as a tissue specific marker in studies of ascidian development and evolution. *Adv. Dev. Biol.* 3: 137-183.
 103. **Jeffery, W.R.** (1994). A model for ascidian development and developmental modifications during evolution. *J. Mar. Biol. Assoc. U.K.* 74: 35-48.
 102. **Jeffery, W.R.** (1993). The myoplasm of ascidian eggs: a plasma membrane skeleton which is modified during evolution. *Biol. Res.* 26: 481-490.
 101. **Jeffery, W.R.** (1993). Role of cell interactions in ascidian muscle and pigment cell specification. *Roux's Arch. Develop. Biol.* 202: 103-111.
 100. Swalla, B.J., K.W. Makabe, N. Satoh, and **W.R. Jeffery** (1993). Novel genes expressed differentially in ascidians with alternate modes of development. *Development* 119: 307-318.
 99. Kovilur, S., J.W. Jacobson, R.L. Beach, **W.R. Jeffery**, and C.R. Tomlinson (1993). Evolution of the chordate muscle actin gene. *J. Mol. Evol.* 36: 361-368.
 98. **Jeffery, W.R.**, and B.J. Swalla (1993). An ankryin-like protein in ascidian eggs and its role in the evolution of direct development. *Zygote* 1: 197-208.
 97. Swalla, B.J., and **W.R. Jeffery** (1992). Vestigial brain melanocyte development during embryogenesis of an anural ascidian. *Develop. Growth & Differ.* 34: 17-25.
 96. Beach, R.L., and **W.R. Jeffery** (1992). Multiple actin genes encoding the same alpha muscle isoform are expressed differentially during ascidian development. *Develop. Biol.* 151: 55-66.
 95. **Jeffery, W.R.**, and B. J. Swalla (1992). Factors necessary for restoring an evolutionary change in an anural ascidian embryo. *Develop. Biol.* 153: 194-205.
 94. **Jeffery, W.R.**, and B.J. Swalla (1992). Evolution of alternate modes of development in

- ascidians. *Bioessays* 14: 219-226.
93. **Jeffery, W.R.** (1992). Axis determination in sea urchin embryos: from confusion to evolution. *Trends in Genetics* 8: 223-225.
 92. **Jeffery, W.R.** (1992). A gastrulation center in the ascidian egg. *Development Supplement* 1992 53-63.
 91. **Jeffery, W.R.** (1991). Ultraviolet sensitive determinants of gastrulation and axis formation in the ascidian embryo. In: *Gastrulation: Patterns, Movements, Molecules*. R. Keller, W.H. Clark, and F. Griffin, eds., Plenum Press, New York, pp. 225-250.
 90. Kusakabe, T., J. Suzuki, H. Saiga, **W.R. Jeffery**, K.W. Makabe, and N. Satoh (1991). Temporal and spatial expression of a muscle actin gene during embryogenesis of the ascidian *Halocynthia roretzi*. *Develop. Growth & Differ.* 33: 227-234.
 89. Swalla, B.J., M.R. Badgett, and **W.R. Jeffery** (1991). Identification of a cytoskeletal protein localized in the myoplasm of ascidian eggs: Localization is modified during anural development. *Development* 111: 425-436.
 88. **Jeffery, W.R.** (1991). Embryogenesis. *Science* 251: 1115-1116.
 87. Browder, L.W., C.A. Erickson, and **W.R. Jeffery** (1991). *Developmental Biology*. Third Edition, Saunders College Publishing, Philadelphia.
 86. **Jeffery, W.R.**, and B.J. Swalla (1991). An evolutionary change in the muscle lineage of an anural ascidian embryo is restored by interspecific hybridization with a urodele ascidian. *Develop. Biol.* 145: 328-337.
 85. **Jeffery, W.R.** (1990). Ultraviolet irradiation during ooplasmic segregation prevents gastrulation, sensory cell induction, and axis formation in the ascidian embryo. *Develop. Biol.* 140: 388-400.
 84. **Jeffery, W.R.**, and B.J. Swalla (1990). The myoplasm of ascidian eggs: a localized cytoskeletal domain with multiple roles in embryonic development. *Sem. Cell Biol.* 1: 373-381.
 83. Beach, R.L., and **W.R. Jeffery** (1990). Temporal and spatial expression of a cytoskeletal actin gene in the ascidian *Styela clava*. *Develop. Genetics* 11: 2-14.
 82. **Jeffery, W.R.**, R.L. Beach, F.E. Harrington, B.J. Swalla, and M.E. White (1990). Patterns of gene expression during ascidian development. In: *Experimental Embryology in Aquatic Plants and Animals*. H.J. Marthy, ed., Plenum Press, New York, pp. 291-314.
 81. **Jeffery, W.R.**, B.J. Swalla, and J.M. Venuti (1990). Mechanism of dorsoventral axis determination in the ascidian embryo. In: *Mechanism of Fertilization: Plants to Humans*. B. Dale, ed., Springer-Verlag Press, Berlin, pp. 591-604.
 80. Swalla, B.J., and **W.R. Jeffery** (1990). Interspecific hybridization between an anural and urodele ascidian: Differential expression of urodele features suggests multiple mechanisms control anural development. *Develop. Biol.* 142: 319-334.

79. **Jeffery, W.R.**, and B.J. Swalla (1990). Anural development in ascidians: evolutionary modification and elimination of the tadpole larva. *Sem. Develop. Biol.* 1: 253-261.
78. **Jeffery, W.R.** (1990). An ultraviolet-sensitive maternal mRNA encoding a cytoskeletal protein may be involved in axis determination in the ascidian embryo. *Develop. Biol.* 141: 141-148.
77. **Jeffery, W.R.** (1989). Requirement of cell division for muscle actin expression in the primary muscle cell lineage of ascidian embryos. *Development* 105: 75-84.
76. **Jeffery, W.R.**, and W.R. Bates (1989). Ooplasmic segregation in the ascidian *Styela*. In: *The Molecular Biology of Fertilization*. H. Schatten and G. Schatten, eds., Academic Press, New York, pp. 341-367.
75. **Jeffery, W.R.** (1989). Localized mRNA and the egg cytoskeleton. *Int. Rev. Cytol.* 118: 150-195.
74. Venuti, J.M., and **W.R. Jeffery** (1989). Cell lineage and determination of cell fate in ascidian embryos. *Int. J. Develop. Biol.* 33: 197-212.
73. **Jeffery, W.R.** (1988). The role of cytoplasmic determinants in embryonic development. In: *Developmental Biology: A Comprehensive Synthesis*. L. Browder, ed., Plenum Press, New York, pp. 1-53.
72. **Jeffery, W.R.** (1988). Shaping American Biology at the Seashore. *Trends in Genetics* 4: 24.
71. Bates, W.R., and **W.R. Jeffery** (1988). Polarization of ooplasmic segregation and dorsal-ventral axis determination in ascidian embryos. *Develop. Biol.* 130: 98-107.
70. Brodeur, R.D., and **W.R. Jeffery** (1987). The cytoskeleton and translational regulation in *Physarum polycephalum*. *Cell Motil. and Cytoskeleton* 7: 129-137.
69. **Jeffery, W.R.**, and C.R. Tomlinson (1987). Muscle cell determination in ascidian embryos. In: *Advances in Gene Technology: The Molecular Biology of Development*, Cambridge University Press, London, pp. 66-67.
68. Tomlinson, C.R., W.R. Bates, and **W.R. Jeffery** (1987). Development of a muscle actin specified by maternal and zygotic mRNA in ascidian embryos. *Develop. Biol.* 123: 470-482.
67. **Jeffery, W.R.** (1987). Crash Course in Molecular Embryology. *Cell* 49: 7-8.
66. **Jeffery, W.R.** (1987). Cell Differentiation. In: *McGraw-Hill Yearbook of Science and Technology*, p.118-120.
65. **Jeffery, W.R.**, and W.R. Bates (1987). Axial determinants in ascidian embryos. In: *Molecular Biology of Invertebrate Development*. UCLA Symposia on Molecular and Cellular Biology, New Series, Vol. 66. J.D. O'Connor, ed., A.R. Liss Press, New York, pp. 159-176.
64. Bates, W.R., and **W.R. Jeffery** (1987). Alkaline phosphatase expression in ascidian egg fragments and andromerogons. *Develop. Biol.* 119: 382-389.

63. Bates, W.R., and **W.R. Jeffery** (1987). Localization of axial determinants in the vegetal pole region of ascidian eggs. *Develop. Biol.* 124: 65-76.
62. Tomlinson, C.R., R.L. Beach, and **W.R. Jeffery** (1987) Differential expression of a muscle actin gene in muscle cell lineages of ascidian embryos. *Development* 101: 751-765.
61. Halsell, S.R., and **W.R. Jeffery** (1986). Role of mRNA 5'-terminal caps in translational dormancy of *Physarum polycephalum*. *Biochem. Biophys. Res. Commun.* 134: 469-476.
60. **Jeffery, W.R.** (1986). Molecular patterns in eggs and their role in embryonic development. *Discovery* 9: 8-13.
59. **Jeffery, W.R.**, J.E. Speksnijder, B.J. Swalla, and J. Venuti (1986). Mechanism of maternal mRNA localization in *Chaetopterus* eggs. *Adv. Invert. Develop. Reproduction* 4: 229-240.
58. **Jeffery, W.R.**, W.R. Bates, R.L. Beach, and C.R. Tomlinson (1986). Is maternal mRNA a determinant for tissue specific proteins in ascidian embryos? *J. Embryol. Exp. Morphol.* 97: 1-14.
57. Bates, W.R., and **W.R. Jeffery** (1986). Expression of alkaline phosphatase determinants in egg fragments and andromerogons of ascidians. In: *Progress in Developmental Biology, Part B*. H.C. Slavkin, ed., A.R. Liss Press, N.Y., pp. 341-344.
56. Uzman, J.A., and **W.R. Jeffery** (1986). Cytoplasmic determinants for cell lineage specification in ascidian embryos. *Cell Differentiation* 18: 215-224.
55. **Jeffery, W.R.** (1986). *Biology of the Protozoa. A Laboratory Manual*. Wm. Brown Press Dubuque, IA.
54. **Jeffery, W.R.** (1985). The spatial distribution of maternal mRNA is determined by a cortical cytoskeletal domain in *Chaetopterus* eggs. *Develop. Biol.* 110: 217-229.
53. **Jeffery, W.R.** (1985). Specification of cell fate by cytoplasmic determinants in ascidian embryos. *Cell* 41: 11-12.
52. **Jeffery, W.R.** (1985). Patterns of maternal mRNA distribution and their role in early development. In: *The Cellular and Molecular Biology of Invertebrate Development*. R. Sawyer and R. Showman, eds., University of South Carolina Press, Columbia, S.C., pp. 125-151.
51. **Jeffery, W.R.** (1985). Identification of proteins and mRNAs in isolated yellow crescents of ascidian eggs. *J. Embryol. Exp. Morph.* 89: 275-287.
50. Swalla, B.J., R.T. Moon, and **W.R. Jeffery** (1985). Developmental significance of a cortical cytoskeletal domain in *Chaetopterus* eggs. *Develop. Biol.* 111: 434-450.
49. **Jeffery, W.R.** (1985). Analysis of cytoplasmic determinants in ascidian embryos. In: *Models for Biomedical Research: A New Perspective*. Committee for Models of Biomedical Research. National Academy Press, Wash., pp. 144-145.
48. **Jeffery, W.R.** (1984). The location of maternal mRNA in eggs and embryos. *Bioessays* 1:

- 196-199.
47. **Jeffery, W.R.** (1984). Spatial distribution of messenger RNA in the cytoskeletal framework of ascidian eggs. *Develop. Biol.* 103: 482-492.
 46. **Jeffery, W.R.** (1984). Pattern formation by ooplasmic segregation in ascidian eggs. *Biol. Bull.* 166: 277-298.
 45. **Jeffery, W.R.**, and S. Meier (1984). Ooplasmic segregation of the myoplasmic actin network in stratified ascidian eggs. *Roux's Archiv. Develop. Biol.* 193: 257-262.
 44. **Jeffery, W.R.**, C.R. Tomlinson, and R.D. Brodeur (1984). Messenger RNA localization in the myoplasm of ascidian eggs. In: *Molecular Biology of Development*. UCLA Symposia on Molecular and Cellular Biology, New Series, Vol. 19. E.H. Davidson and R.A. Firtel, eds., Alan R. Liss, Inc., New York, pp. 145-163.
 43. **Jeffery, W.R.**, and R.A. Raff, eds. (1983). *Time, Space, and Pattern in Embryonic Development*. A.R. Liss Press.
 42. **Jeffery, W.R.**, C.R. Tomlinson, R.D. Brodeur, and S. Meier (1983). The yellow crescent of ascidian eggs: Molecular organization, localization, and role in early development. In: *Molecular Aspects of Early Development*. G. Malacinski and W.H. Klein, eds., Plenum Press, New York, pp. 1-38.
 41. Moon, R.T., R. Nicosia, C. Olsen, M.B. Hille, and **W.R. Jeffery** (1983). The cytoskeletal framework of sea urchin eggs and embryos: Developmental changes in the association of messenger RNA. *Develop. Biol.* 95: 447-458.
 40. Raff, R.A., and **W. R. Jeffery** (1983). *Preface to Time, Space, and Pattern in Embryonic Development*, A.R. Liss Press, New York.
 39. **Jeffery, W.R.** (1983). Messenger RNA localization and cytoskeletal domains in ascidian embryos. In: *Time, Space, and Pattern in Embryonic Development*. W.R. Jeffery and R.A. Raff, eds., A.R. Liss Press, pp. 241-259.
 38. **Jeffery, W.R.** (1983). Maternal RNA and the embryonic localization problem. In: *Control of Embryonic Gene Expression*. M.A.Q. Siddiqui, ed., CRC Press, pp. 73-114.
 37. **Jeffery, W.R.**, and L. Wilson (1983). Localization of messenger RNA in the cortex of *Chaetopterus* eggs and early embryos. *J. Embryol. Exp. Morphol.* 75: 224-239.
 36. **Jeffery, W.R.**, C.R. Tomlinson, and R.D. Brodeur (1983). Localization of actin messenger RNA during early ascidian development. *Develop. Biol.* 99: 408-417.
 35. **Jeffery, W.R.** (1983). Ernest Everett Just (1883-1941): A dedication. *Biol. Bull.* 165: 487.
 34. **Jeffery, W.R.**, and S. Meier (1983). A yellow crescent cytoskeletal domain in ascidian eggs and its role in early development. *Develop. Biol.* 96: 125-143.
 33. Capco, D.G., and **W.R. Jeffery** (1982). Transient localizations of messenger RNA in *Xenopus laevis* oocytes. *Develop. Biol.* 89: 1-12.

32. **Jeffery, W.R.** (1982). Preparation of ribosomes and polyribosomes. In: *Cell Biology of Physarum and Didymium*. Vol. 2, J.C. Daniel, ed., Academic Press, New York, pp. 290-299.
31. **Jeffery, W.R.** (1982). Messenger RNA in the cytoskeletal framework: Analysis by *in situ* hybridization. *J. Cell Biol.* 95: 1-7.
30. **Jeffery, W.R.** (1982). Calcium ionophore polarizes ooplasmic segregation in ascidian eggs. *Science* 216: 545-547.
29. Adams, D.S., D. Noonan, and **W.R. Jeffery** (1981). Stored messenger ribonucleoprotein particles in differentiated sclerotia of *Physarum polycephalum*. *Differentiation* 20: 177-187.
28. Capco, D.G., and **W.R. Jeffery** (1981). Regional accumulation of vegetal pole poly (A)⁺ RNA injected into fertilized *Xenopus* eggs. *Nature* 294: 255-257.
27. Hecht, R.M., L. Gossett, and **W.R. Jeffery** (1981). Ontogeny of maternal and newly-transcribed mRNA analyzed by *in situ* hybridization during development of *Caenorhabditis elegans*. *Develop. Biol.* 83: 374-379.
26. **Jeffery, W.R.**, D.S. Adams, and D. Noonan (1981). Cytoplasmic processing events in the polyadenylate region of *Physarum* messenger RNA. *Mol. Biol. Rep.* 7: 63-70.
25. Adams, D.S., D. Noonan, and **W.R. Jeffery** (1981). Cytoplasmic processing events accompany the transfer of mRNA from the free mRNP to the polysomes in *Physarum*. *Proc. Natl. Acad. Sci. U.S.A.* 73: 83-87.
24. **Jeffery, W.R.** (1981). A model system. Growth and differentiation in *Physarum polycephalum*. *Science* 212: 1139.
23. Adams, D.S., D. Noonan, and **W.R. Jeffery** (1980). The poly (A) protein complex is restricted to the non-polysomal messenger ribonucleoprotein in *Physarum polycephalum*. *Biochemistry* 19: 1965-1970.
22. **Jeffery, W.R.** (1980). The follicular envelope of ascidian eggs: A site of messenger RNA and protein synthesis during early embryogenesis. *J. Exp. Zool.* 212: 279-289.
21. Adams, D.S., D. Noonan, and **W.R. Jeffery** (1980). An improved method for the isolation of polysomes and messenger RNA from synchronous macropasmodia of *Physarum polycephalum*. *Analyt. Biochem.* 103: 408-412.
20. Adams, D.S., D. Noonan, and **W.R. Jeffery** (1980). A model for the organization of the poly (A)-protein complex in messenger ribonucleoprotein. *FEBS Lett.* 114: 115-118.
19. **Jeffery, W.R.** (1979). Translational regulation of polysome formation during dormancy of *Physarum polycephalum*. *J. Bacteriol.* 140: 490-497.
18. Peters, C., and **W.R. Jeffery** (1978). Postfertilization poly (A)-protein complex formation on sea urchin maternal messenger RNA. *Differentiation* 12: 91-97.

17. Adams, D.S., and **W.R. Jeffery** (1978). Poly (A) degradation by two distinct processes in the cytoplasmic RNA of *Physarum polycephalum*. **Biochemistry** 17: 4519-4524.
16. Capco, D.G., and **W.R. Jeffery** (1978). Origin and spatial distribution of maternal messenger RNA during oogenesis of an insect, *Oncopeltus fasciatus*. **J. Cell Sci.** 39: 63-76.
15. Capco, D.G., and **W.R. Jeffery** (1978). Differential distribution of poly (A)-containing RNA in the embryonic cells of *Oncopeltus fasciatus*: Analysis by *in situ* hybridization with a [³H]-poly (U) probe. **Develop. Biol.** 67: 137-151.
14. **Jeffery, W.R.**, and D.G. Capco (1978). Differential accumulation and localization of maternal poly (A)-containing RNA during early development of the ascidian, *Styela*. **Develop. Biol.** 67: 151-166.
13. **Jeffery, W.R.** (1978). Composition and properties of messenger ribonucleoprotein fragments containing and lacking polyadenylate. **Biochem. Biophys. Acta** 521: 217-228.
12. **Jeffery, W.R.**, and C. Peters (1977). Polypeptide composition of the globin poly (A)-protein complex from rabbit reticulocytes. **Mol. Biol. Rep.** 3: 379-386.
11. **Jeffery, W.R.** (1977). Polyadenylation of maternal and newly-synthesized RNA during starfish oocyte maturation. **Develop. Biol.** 57: 98-108.
10. **Jeffery, W.R.** (1977). Hormonal action of 1-methyladenine: The effect of enzymatic digestion of intact starfish oocytes on the induction of meiosis. **Gen. Comp. Endocrinol.** 31: 259-269.
9. **Jeffery, W.R.** (1977). Characterization of the polypeptides associated with messenger RNA and its poly (A) sequence in Ehrlich ascites messenger ribonucleoprotein. **J. Biol. Chem.** 252: 3525-3532.
8. **Jeffery, W.R.**, and G. Brawerman (1975). Association of the polyadenylate segment of messenger RNA with other polynucleotide sequences in mouse sarcoma 180 polyribosomes. **Biochemistry** 14: 3445-3451.
7. **Jeffery, W.R.** (1974). Macromolecular requirements for the initiation and maintenance of DNA synthesis during the cell cycle of *Tetrahymena pyriformis*. **J. Cell Physiol.** 83: 1-10.
6. **Jeffery, W.R.**, and H.P. Rusch (1974). Induction of somatic fusion and heterokaryosis in two incompatible strains of *Physarum polycephalum*. **Develop. Biol.** 39: 4633-4637.
5. **Jeffery, W.R.**, and G. Brawerman (1974). Characterization of the steady-state population of messenger RNA and its polyadenylic acid segment in mammalian cells. **Biochemistry** 13: 331-335.
4. **Jeffery, W.R.**, J. Frankel, L.E. DeBault, and L.M. Jenkins (1973). Analysis of the schedule of DNA replication in heat-synchronized *Tetrahymena*. **J. Cell Biol.** 59:1-11.
3. **Jeffery, W.R.** (1972). Proteolytic enzyme activity during early development of the starfish *Asterias forbesii*. **Exp. Cell Res.** 72: 579-583.
2. **Jeffery, W.R.** (1972). Evidence for a temporal incompatibility between DNA replication and

cell division during the cell cycle of *Tetrahymena*. *J. Cell Biol.* 53: 624-635.

1. **Jeffery, W.R.**, K.D. Stuart, and J. Frankel (1970). The relationship between DNA replication and cell division in heat-synchronized *Tetrahymena*. *J. Cell Biol.* 46: 533-544.