

Timothy Scott Wakefield
Department of Biology
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John Brown University
Siloam Springs, Arkansas 72761
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Teaching Specialties: Foundations of biology; anatomy; physiology; cell biology; zoology; marine biology; environmental science

Research Specialty: Stream Ecology / Ultrastructure and cell to cell interaction in marine invertebrate/dinoflagellate symbioses

Academic degrees:

Ph.D. Auburn University, 2000

M.A. University of Missouri Kansas City, 1989

B.S. Biology, Union University 1986

Job history:

2012-present Professor at John Brown University

2006-2012 Associate Professor at John Brown University

2000-2005 Assistant Professor at John Brown University

1999-2002 *Textbook reviewer: for a complete list of reviewed texts see attached page

1997-2000 Instructor in General Biology Program at Auburn University

1993-1997, Graduate Teaching Assistant at Auburn University, Auburn, Alabama

Summer of 1996, Adjunct professor at Auburn University, Auburn, Alabama

Spring of 1995, Adjunct professor at Southern Union Community College, Opelika, Alabama

1991-1993, Associate Professor in the Pre-professional Health Sciences Dept. at Donnelly College, Kansas City, Kansas

1988-1991, Dolphin Trainer and Handler, Marine Animal Productions, Gulfport, Mississippi

1988-1989, Graduate Teaching Assistant at University of Missouri Kansas City, Kansas City, Missouri

Teaching Experience:

2012-present Professor teaching Human Anatomy, Animal Physiology, Animal Biology, Faith & Science, Marine Biology, Global Environmental Stewardship

2006-present Associate professor teaching courses as listed above as well as General Biology (non-majors), and Bioethics

2000-2005 Assistant professor teaching courses as listed above

Summer of 2003, 2005-2008, 2010 Invited professor teaching Marine Invertebrates, Marine Mammals or Marine Biology at Pacific Rim Campus of the AuSable Institute of Environmental Studies.

1997-2000 Course Instructor teaching lecture and lab in: Principles of Biology (majors), Perspectives in Biology (non-majors), Human Biology (non-majors)

1993-1997, GTA laboratory instructor and some lecturing in: Vertebrate Embryology, Physiology

1996, Adjunct professor teaching lecture in: The Human Body in Health and Disease

1995, Adjunct professor teaching lecture and labs in: Anatomy and Physiology

1991-1993, Associate Professor teaching lecture and labs in: Chemistry, General Biology, Cell Biology, Anatomy, Physiology, Genetics

1987-1989, GTA laboratory instructor for: Introductory Botany, Introductory Zoology, Comparative Anatomy and Physiology

Academic awards:

JBU Summer Scholarship Award, \$1,000 awarded by John Brown University, The Institute for Learning Enhancement (TILE) 2002

The Kenneth Ottis Distinguished Graduate Fellowship, \$1,500 awarded by Auburn University Dept. of Zoology and Wildlife Science 1998-1999

The Kenneth Ottis Distinguished Graduate Fellowship, \$1,000 awarded by Auburn University Dept. of Zoology and Wildlife Science 1997-1998

Dean's List, Union University 1985

Research awards:

JBU Research Award: \$5000 awarded through the JBU Office of Academic Affairs, May 2012

JBU Research Award: \$5000 awarded through the JBU Office of Academic Affairs, May 2011

JBU Shipp's Grant: \$4000 awarded by John Brown University, May 2008

JBU Summer Scholars Fellowship: \$5000 x 2 years, awarded by John Brown University, December 2007

JBU Shipp's Grant: \$4000 awarded by John Brown University, May 2006

JBU Summer Research Grant: \$1000 awarded by John Brown University, May 2002

JBU Spring Research Grant: \$2000 awarded by John Brown University, Division of Natural Sciences, March 2002

JBU Summer Research Grant: \$1850 awarded by John Brown University, May 2001

Travel Award: \$500 awarded by the Auburn University Graduate School, January 2000

Graduate Student Research Award: \$1000 awarded by the Auburn University Graduate School, May 1999

Travel Award: \$250 awarded by the College of Science and Mathematics, May 1999

Small Equipment Grant: \$2,105 awarded by the Auburn University Competitive Research Grant Committee, January 1999 (Contributed the data used in writing this grant for our lab)

Ruska Award: \$100 awarded by Southeastern Microscopy Society in recognition for the best student paper presentation at their annual meeting, July 1998

Presidential Award: \$130+travel expenses awarded by the Microscopy Society of America in recognition of original research presented at their annual meeting, July 1998

Grant in aid of Research: \$2,850 awarded by the Auburn University Vice President Office of Research, April 1998 (Contributed to the writing of this grant for our lab)

Travel Award: \$150 awarded by Auburn University Graduate School, March 1998

Travel Award: \$100 awarded by the Dept. of Zoology and Wildlife Sciences, February 1998

Travel Award: \$150 awarded by Auburn University Graduate School, July 1997

Tuition Scholarship: Award to cover summer tuition at the Friday Harbor Marine Laboratory of the University of Washington, June 1995

Research Experience:

2008-present John Brown University Undergraduate research in stream ecology

Summer 2008 San Juan Island, WA Research on Orca whale behavior

2005-2008 John Brown University Undergraduate research in several areas of *Symbiodinium bermudense* biology; psychology/biology study on familiarity and conservation of endangered animals

1993-2000 Auburn University Ultrastructure of symbiotic dinoflagellate *Symbiodinium bermudense*; Origin and importance of symbiosome membrane of *S. bermudense* and its host the anemone *Aiptasia pallida*; Biochemical assay of zooxanthellae to determine percent protein, carbohydrate and lipid

Summer, 1995. University of Washington's Marine Station at Friday Harbor, San Juan Island, Washington Cell motility in the marine heliozoan *Gymnosphaera albida* .

1989. University of Missouri Kansas City Plant taxonomy

1988. University of Missouri Kansas City Limnology of Urban and Suburban Lakes in the Kansas City metropolitan area

Publications:

Papers

- Wakefield, T.S., S.C. Kempf 2001. Development of host- and symbiont-specific monoclonal antibodies and confirmation of the origin of the symbiosome membrane in a cnidarian-dinoflagellate symbiosis. *Biological Bulletin* 200:127-143
- Wakefield, T.S., M.A. Farmer, S.C. Kempf 2000. A revised description of the fine structure of *in situ* "zooxanthellae" genus *Symbiodinium*. *Biological Bulletin* 199:76-84
- Wakefield, T.S., S.C. Kempf, & M.A. Farmer 1998. The contribution of *Symbiodinium microadriaticum* to the symbiosome membrane in the anthozoan host *Aiptasia pallida*. *The Beam* 14(1): 10-14 (reviewed versions of the same article that appeared in the *Proc. MSA*; reprinted with permission from MSA)
- Wakefield, T.S., S.C. Kempf, & M.A. Farmer 1998. The contribution of *Symbiodinium microadriaticum* to the symbiosome membrane in the anthozoan host *Aiptasia pallida*. *Proceedings of the Microscopy Society of America* 4(2): 1182-1183

Abstracts

- Wakefield, T.S. and S.C. Kempf. 2000 Cryoultramicrotomy and rapid freezing/freeze substitution/low temperature embedding: alternative methods in cytochemistry reveal fragile antigen location. *Proceedings of the Southeastern Microscopy Society*. Vol. 21: p. 19.
- Wakefield, T.S. & S.C. Kempf 1999. Confirmation of the production of the symbiosome membrane by both symbiont and host cell. *American Zoologist* 39(5): 348A
- Wakefield, T.S. & S.C. Kempf 1999. Confirmation of host/symbiont origin of symbiosome membrane of *Aiptasia pallida* using immunofluorescence and immunogold. *Proceedings of the Southeastern Microscopy Society* 20: 17
- Wakefield, T.S. & S.C. Kempf 1997. The possible role of *Symbiodinium microadriaticum* in the production of the symbiosome membrane in the anthozoan host *Aiptasia pallida*. *American Zoologist* 37(5): 48A
- Wakefield, T.S. & S.C. Kempf 1997. Re-examination of *Symbiodinium microadriaticum* ultrastructure. *Proceedings of the Southeastern Microscopy Society* 19: 24
- Wakefield, T.S. M.A. Farmer & S.C. Kempf 1997. Ultrastructure of *in situ Symbiodinium microadriaticum*. *The Journal of the Alabama Academy of Science* 68(2): 134

Oral Presentations at Meetings:

1. "Is Whale Watching a Threat to Endangered *Orcinus orca*" 93rd Annual meeting of the Arkansas Academy of Sciences, 2009
2. "Cryoultramicrotomy and rapid freezing/freeze substitution/low temperature embedding: alternative methods in cytochemistry reveal fragile antigen location." Southeastern Microscopy Society 2000 Annual Meeting; Ruska Award Competition
3. "Confirmation of the production of the symbiosome membrane by both symbiont and host cell." Society for Integrative and Comparative Biology 2000 Annual Meeting
4. "Confirmation of host/symbiont origin of the symbiosome membrane in *Aiptasia pallida* using immunofluorescence and immunogold" Southeastern Microscopy Society 1999 Annual Meeting; Ruska Award Competition
5. "Re-examination of *Symbiodinium microadriaticum* ultrastructure" Southeastern Microscopy Society 1997 Annual Meeting; Ruska Award Competition

6. "Ultrastructure of *in situ* *Symbiodinium microadriaticum*" Alabama Academy of Science 1997
Annual Meeting

Poster Presentations at Meetings:

1. "An assessment of the biological and chemical properties of Sager Creek". 95th Annual meeting of the Arkansas Academy of Sciences, 2011
2. "A study of the health of Flint Creek". JBU Research Symposium, 2011
3. "A Preliminary Assessment of Flint Creek 'Health'" JBU Research Symposium, 2010
4. "A Preliminary Assessment of Sager Creek 'Health'" JBU Research Symposium, 2010
5. "Assessing the "Health" of Sager Creek through Water Chemistry and Macroinvertebrate Populations" 93rd Annual meeting of the Arkansas Academy of Sciences, 2009
6. "Is Whale Watching a Threat to Endangered *Orcinus orca*" Eleventh International Congress of the American Cetacean Society, 2008
7. "Cnidarian/Dinoflagellate Endosymbiont Motility" 91st Annual meeting of the Arkansas Academy of Sciences, 2006
8. "The contribution of *Symbiodinium microadriaticum* to the symbiosome membrane in the anthozoan host *Aiptasia pallida*" Microscopy and Microanalysis 1998 Annual Meeting; Ruska Award Competition
9. "The symbiosome membrane: symbiont or host derived?" Auburn University 1998 Graduate Student Organization Research Forum
10. "The possible role of *Symbiodinium microadriaticum* in the production of the symbiosome membrane in the anthozoan host *Aiptasia pallida*" Society for Integrative and Comparative Biology 1998 Annual Meeting