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University education

M.S., Biology, Case Western Reserve University, Cleveland, Ohio, 1989

B.S., Biology, University of Notre Dame, Notre Dame, Indiana, 1983

Professional experience

2000 - present Director, Center for Science and Mathematics Education
College of Arts and Sciences, Case Western Reserve University
Cleveland, Ohio

The Center for Science and Mathematics Education was established in the College of Arts
and Sciences to serve as a clearinghouse for pre-college programs and to liaison with the
K-12 community.

The Center serves its university and K-12 constituencies by:

- Coordinating exemplary educational outreach programs such as the JASON Project and
  the Northeast Ohio Regional Science Olympiad

- Providing logistical and recruiting support for the 75+ outreach programs on campus, with
- a particular emphasis on professional development in math and science.

- Working with faculty in all eight schools at the university to develop the outreach
  component of grant proposals.

- Taking a leading role in local and state-wide educational reform by serving on
  committees such as the Cleveland Metroparks Zoo Education Advisory Board, the
  Cleveland District Standards Leadership Committee, the Ohio Technology Congress,
  and the Ohio Citizens for Science.

- Chairing a joint task force between the university and the Cleveland Municipal School
  District.

In the last 2 years, the Center has conducted the first university-wide survey of K-12
outreach programs and has received more than $950,000 in external support for its programs.

1999 - present

Lecturer, Department of Biology
Case Western Reserve University
Cleveland, Ohio

Teaching responsibilities for the 2001-2002 academic year

- Biol 114 – Principles of Biology
- Biol 216 – Organisms and Ecosystems
- Biol 336 - Aquatic Biology
- Biol 339 - Aquatic Biology Laboratory
- Biol 344 - Laboratory for Microbiology
- Biol 802 – Summer Ecology for Middle and High School Teachers
- Squire Valleevue Farm Ecology Education Program
- HCEM – Health Careers Enhancement Program for Minorities

1985 - 2002

Manager of the Graduate and Undergraduate Biology Teaching Laboratories
Department of Biology, Case Western Reserve University
Cleveland, Ohio

As Biology Laboratory Manager, responsibilities included :

1. *Instructor* – Courses taught

- Biol 110 – Principles of Biology
- Biol 111 – Introduction to Experimental Biology
- Biol 223 – Comparative Vertebrate Anatomy
- Biol 336 – Aquatic Biology
- Biol 339 – Aquatic Biology Laboratory
- Biol 343 – Microbiology
- Biol 344 – Laboratory for Microbiology
- Biol 801 – Biotechnology Institute for High School Teachers
- Biol 802 – Summer Ecology for Middle and High School Teachers
- HCEM – Health Careers Enhancement Program for Minorities

2. *Laboratory preparation* - supervise a team of undergraduate laboratory assistants
who provide equipment, solutions, and supplies for the laboratories listed above as well as
    - Laboratory in Biochemistry, Molecular Biology, and Cell Biology
    - Physiology Laboratory
    - Biotechnology Laboratory : Genes and Genetic Engineering
    - Genetics Laboratory

3. *Teaching assistants* - supervise, train, and coordinate the graduate and undergraduate teaching assistants in my courses and provide support for the teaching assistants in the other laboratory courses.

1993 - 1999 Assistant Director, Center for Biology Education (Outreach Programs)
Department of Biology, Case Western Reserve University
Cleveland, Ohio

As Assistant Director, responsible for the conception, development, participation and/or
coordination of the following programs :

1. Biotechnology Program

- Workshop in Biotechnology for High School Teachers
- Summer Program in Biotechnology for the Gifted and Talented (High school students)
- EBTC Equipment Resource Center - qualified high school teachers are able to borrow
  equipment, reagents, and supplies necessary to complete six laboratories in biotechnology

2. Terrestrial and Aquatic Ecology for Middle and High School Teachers

- A team taught program with sections on plant ecology, aquatic ecology, and the ecology of reptiles and amphibians

3. Primary School Outreach

- Coordinate with the biology teachers at area elementary schools to supplement the laboratory component of their elementary and middle school curriculum.
  Visit schools to provide them with laboratory equipment and materials and to conduct experiments.
- Serve as resource personnel for consultation on science projects and provide equipment for the completion of projects.

1992 - 1998 Part-time Faculty
Department of Biology, John Carroll University
University Heights, Ohio

Instructor

- Principles of Biology I and II
- Principles of Biology Laboratory I and II

Research interests

- *Aquatic ecology* - Conducted an extensive investigation of the population characteristics of bluegill sunfish for master's thesis. During this time, also participated in additional projects including a selective
breeding program to develop a warm-water tolerant strain of trout, and a bass-bluegill population project which

was able to increase the mean size of bluegill by selective thinning of stunted bluegill and supplementing the bass population.

Currently, interests are concentrated in two areas. One is wetland identification, delineation, mitigation, and functional assessment methodologies. For three years, we characterized a local wetland which is part of a larger wetland complex. Our studies focused on the chemical, physical, and biological aspects of this wetland with the most recent emphasis on hydrology. Management and regulatory components are also areas of focus as we assist a local environmental group with their efforts to protect their unique ecosystem.

The second area of interest is the interactions which determine community structure in small systems. In the Aquatic Biology Laboratory course, we have been testing the affects of top down and bottom up forces in farm pounds at our biological field station. We monitor the major trophic levels in these systems and attempt to correlate that data with nutrient levels and predation pressure by fish.

- *Plant molecular biology* - For two years, participated on a part-time basis in a project to develop an RFLP map for flax in the laboratory of Dr. Christopher Cullis. As part of this project, extracted DNA, performed restriction digests, Southern blots and hybridization experiments in an attempt to detect restriction fragment length polymorphisms in flax.

Departmental activities

- Squire Valleevue Farm Biology Education Committee
- Chemical Safety Officer

Campus and community service

- Coordinator, Health Sciences Summer Symposium in conjunction with the
- Undergraduate Admissions Office
- Case Pro-Engineering Program (C-PEP) instructor
- Upward Bound
- Cleveland School of the Arts Science Advisory Board
- Committee on Academic Support for Freshman, Educational Support Services
- Science Olympiad event captain
- Freshman and majors advisor
- Principal for a Day 2001, 2002

Professional organizations

- ABLE, Association for Biology Laboratory Education (Board of Directors, Major
  Workshop Chairman)

Seminars and presentations

- Definitions and Functions of Wetlands. Audubon Society of Greater Cleveland, 1995.

- Identification of T lymphocytes. 18th Conference of the Association for Biology Laboratory Education, Boston University, 1996.

- Measuring genetic variability in natural populations by allozyme electrophoresis. 19th Conference of the Association for Biology Laboratory Education, University of Calgary, 1997.

- Faculty expectations of TAs/TAs expectations of Faculty. UNIV400 Seminar, Educational Support Services, Case Western Reserve University, 1997.

- Experimental analysis of community structure in aquatic ecosystems. 20th Workshop/Conference of the Association for Biology Laboratory Education, Florida State University, 1998.

- Determination of genetic variability in natural populations by allozyme electrophoresis.
  Regional ABLE Conference, University of Kentucky, Major workshop presentation, 1999.

- Models in high school/university partnerships: Universities as training centers for teachers.
  Forging A Link II Conference, Hope College, Holland MI, 2000.

- When hell freezes over and monkeys fly : The evolution of a successful partnership.
  Poster presented at Forging a Link III Conference, Hope College, Holland, MI, 2001.

- Extending the reach of outreach by partnering with informal science educators. Outreach Scholarship 2001, Penn St. University, 2001.

Honors and awards

- Nominated, Excellence in Undergraduate Teaching, Undergraduate Student Government, 1997, 2000

- Nominated, Carl F. Wittke Award for Excellence in Undergraduate Education, 2001

Professional development

- National SEAMS Faculty Institute : Integrating Service into the Undergraduate Science,
  Engineering and Mathematics Curriculum, Case Western Reserve University, 1998.

- Wetland Delineation and Management Training Workshop, Richard Chinn Environmental
  Training, Inc., Columbus, OH, 1998

- Association for Biology Laboratory Education Annual Workshop/Conference, University
  of Nebraska-Lincoln, Lincoln, NE., 1999

- Association for Biology Laboratory Education Annual Workshop/Conference, Clemson University, Clemson, S.C., 2000.

- Project TIMS Workshop for Undergraduate Educators, University of Akron, 2001

- All Hands on Deck : Learning Adventures Aboard "Old Ironsides", Case Western
  Reserve University, 2001.

- Cleveland Regional Council of Science Teachers (CRCST), Spring Symposium,
  Cleveland Metroparks Zoo, 2001.

- Using Inquiry in the Science Classroom, Hiram College, 2001

Publications

Bader, J. 1997. Identification of T lymphocytes. Pages 113-123. *In* Tested studies for laboratory
teaching, Volume 18 (J.C. Glase, Editor) Proceedings of the 18th Workshop/Conference of the
Association for Biology Laboratory Education (ABLE), 320 pages.

Bader, J. 1997. *Professor's Resource Manual* to accompany Volk/Brown Basic Microbiology,
Eighth Edition. Benjamin/Cummings Publishing, Inc., New York, New York. 333 pages.

Bader, J. 1998. Determination of genetic variability in natural populations by allozyme electrophoresis. Pages 25-42. *In* Tested studies for laboratory teaching, Volume 19 (S. Karcher, Editor) Proceedings of the 19th Workshop/Conference of the
Association for Biology Laboratory Education (ABLE), 365 pages.

Bader, J. 1999. Experimental evaluation of community structure in aquatic ecosystems.

Pages 207-222. *In* Tested studies for laboratory teaching, Volume 20 (S. Karcher, Editor)
Proceedings of the 20th Workshop/Conference of the Association for Biology Laboratory
Education (ABLE), 399 pages.