

## Barbara Kuemerle PhD

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**Career objective:** To fully engage in the profession of academic instruction at the university level in the field of Biological Sciences, and to enhance student development in both academics and research by serving as an advisor and mentor.

### **Employment:**

2015-present Senior instructor

2009-2014 Instructor  
Department of Biology  
Case Western Reserve University

#### Responsibilities and Skills:

Teaching: introductory and upper level courses comprised of both large and small student enrollments (indicated in parenthesis) in the Biological Sciences, including:

BIOL 114: Principles of Biology (~100)  
BIOL 116: Introduction to Anatomy and Physiology I (~100)  
BIOL 216: Development and Physiology (~135-280)  
BIOL 216L: Development and Physiology Laboratory (~13)  
BIOL 301/401: Biotechnology Laboratory: Genes and Genetic Engineering (~30)  
BIOL 302/COGS 322: Human Learning and the Brain (SAGES Departmental Seminar) (~17) BIOL 325: Molecular Cell Biology (~30)  
BIOL 385: Biological Processes in Learning and Cognition (SAGES Capstone Course) (~8) BIOL 389S: Independent Research in Biology (2)

Academic advising: for students majoring/minoring in Biology (~12-20/semester)

Service on Committees (see below for detailed descriptions)

2017-present CWRU Posse 1 Mentor

#### Responsibilities and Skills:

Conduct weekly meetings with scholars (both individual and group) providing guidance, motivation, emotional support and role modeling. Aid in career exploration, goal setting, developing contacts and identifying resources. Submit weekly reports to Posse staff. Participate in regular training programs and Posse plus retreats.

2007-2008 Visiting Assistant Professor  
Department of Biology, CWRU

Responsibilities and Skills: Included above and Supervisor of Biol 216 Laboratory Courses

**Employment (continued):**

2006- 2007      Adjunct Faculty Member  
Lorain County Community College  
Division of Science and Math

Responsibilities and Skills:

Teaching Biology 121: Anatomy and Physiology I (laboratory portion)  
Obtained valuable experience in college level instruction in the field of Biological Sciences.

2000-2001      Pharmaceutical Marketing Advisory Panel Moderator  
Arista Marketing Associates, Nelson Communications  
2000 Lenox Drive Suite 100, Lawrenceville, NJ 08648

Responsibilities and Skills:

Participated in conferences where thought-leaders in the fields of Rheumatology and Gastroenterology presented scientific data on the use of the anti-TNF biologic, Remicade, for the treatment of Rheumatoid arthritis and Crohn's disease.  
Received training in group dynamics  
Conducted 2 hour didactic break-out discussion sessions  
Asked catalyst questions, sequentially involving all the physician participants to address concerns and provide solutions to treatment challenges.  
Honed skills in interpersonal communication, interactive presentation, persuasion and instruction.

1999-2007      Research Associate  
Department of Neurosciences, Case Western Reserve University  
Laboratory of Dr. Karl Herrup, Professor of Neurosciences  
Research: The *En2* knock-out mouse as an animal model for the neuropathology of Autism Spectrum Disorder.

Responsibilities and Skills:

Planning and execution of a research project  
Grant and publication writing, oral presentations  
Direct management and training of others (students, research assistants)  
Technical and laboratory skills include: immunohistochemistry, stereotactic surgery, application and assessment of neuronal tracers, mouse colony maintenance, microscopic analysis, Image J software, molecular biology techniques (DNA preparation/analysis, PCR, etc).

**Honors:**

2018              Recipient: Dorothy Pijan Outstanding Faculty Award for Student Development  
2017, 2009      Learning Fellowship: CWRU University Center for Innovation in Teaching and Education (UCITE)  
2013              Nomination: Carl F. Wittke Award for Excellence in Undergraduate Teaching  
2011              Nomination: Undergraduate Teaching Excellence Award by Undergraduate Student Government  
2009              Recipient: The American Medical Student Association Golden Apple Teaching Award  
1998              Recipient: National Research Service Award (NRSA)

**Professional Affiliations:**

The Society for Neuroscience (SFN)  
American Association for the Advancement of Science (AAAS)  
National Center for Case Study Teaching in Science (NCCSTS)

**Scholarly Activities:**

- 2018 21<sup>st</sup> world Congress on Neurology and Therapeutics Conference- London England (attendee)  
2018 Summer Teaching Institute Active Learning Conference (participant)  
2018 First edition of customized text book released: Development and Physiology- The Biology of You. Cognella Publishing.  
2018 Completed training and earned certificate for QPR Training  
2017, 2018 Collaborative effort with James E. Zull writing the second edition of the text: "The Art of Changing the Brain- Enriching the Practice of Teaching by Exploring the Biology of Learning"  
2014 Annual Fall Conference: National Center for Case Study Teaching in Science, NY (participant)  
2012 Turning Technologies Learning Forum and Workshop, CWRU (participant)  
2011, 2013 Reviewer: Campbell Biology Textbook (chapters in editions 9 and 10)  
2010 ADInstruments Powerlab Bootcamp Training Conference, Colorado Springs (participant)

**Research:**

- 2018 CWRU Research ShowCASE poster presentation entitled: "Learning Retention-A Comparison Between the May Term and the Fall term" Barbara A. Kuemerle and Michael P. Moore  
2013 Grant recipient (The Nord Foundation) entitled: "A Longitudinal Study to Assess Learning Retention- Comparison of May Term (3 week course) to Fall Semester (15 week course).  
2013 Completed the Human Research Curriculum, Group 2 Social & Behavioral Research Faculty, Staff and Students Basic Course/ 1 of The Collaborative Institutional Training Initiative (CITI)  
2010 CWRU Research ShowCASE poster presentation entitled: "Addressing Malnutrition in Southern Africa: Development of Novel Molecular Markers for the Marama Plant" (1<sup>st</sup> author)

**Education:**

- 1997-1998 Post-doctoral Fellow  
Center for Genetic Research, Department of Neurosciences, The Cleveland Clinic Foundation  
Advisor: John Cowell, PhD  
Research: Molecular Characterization of the breakpoint region associated with Multiple Myeloma

Technical skills acquired:

Pulsed field gel electrophoresis with Yeast Artificial Chromosomes (YACs)  
Preparation of metaphase chromosomal spreads  
Fluorescent *in situ* hybridization (FISH)

- 1993-1997 Doctorate in Genetics, May 1997

Thesis research, Department of Genetics  
Alzheimer Research Laboratory, Case Western Reserve University Advisor:  
Karl Herrup PhD  
Thesis: The Role of *Engrailed-2* in Cerebellar Patterning and Compartmentation.

Skills acquired:

Understanding of developmental neuroscience  
Ability to critically analyze scientific data (journal club presentation, grant review)  
Immunohistochemistry, Microscopy  
Tissue sectioning (cryostat, paraffin)  
Molecular biology techniques (PCR, electrophoresis)

**Education (continued):**

Mouse colony maintenance  
Proficient with powerpoint and excel.

1992-1993      Doctoral candidate  
The Jackson Laboratory, Bar Harbor, Maine Advisor:  
John Schimenti, PhD  
Research: Gene targeting of the T Complex responder gene.

*(Dr. Schimenti relocated to The Jackson Laboratory during my graduate training. I continued my research with him in Maine for about a year before returning to CWRU to complete a new thesis project with Dr. Herrup).*

**Skills acquired:**

Expertise in tissue culture, maintenance of mouse embryonic stem cells  
Vector design, molecular cloning, (e.g., transformation, plasmid preparation, preparation of competent cells), Southern analysis, DNA sequencing

1988-1992      Graduate Student  
Department of Genetics, Case Western Reserve University  
Advisor: John Schimenti PhD  
Research: Knock-out of the mouse T Complex responder gene.  
Completed core courses in cellular and molecular biology as well as upper level genetics

1987-1988      Undergraduate laboratory assistant  
Department of Molecular Genetics, Ohio State University  
Advisor: Beryl Oakley PhD  
Research: Mitotic recombination in *Aspergillus nidulans*

1987              Summer research student  
Department of Biology, Case Western Reserve University  
Advisor: Christopher Town PhD  
Research: Anthranilate synthase activity in *Arabidopsis thaliana*

1984-1988      BS Molecular Genetics  
Ohio State University, Columbus, OH  
Active membership in Alpha Epsilon Delta (honors society) and Helix (biology association)

**Publications:**

Kuemerle, B. (2018) Development and Physiology- The Biology of You (First Edition) Cognella Publishing.  
ISBN 978-1-63487-859-3

Kuemerle B., Bilovocky N., Gulden F., Williams, E. and Herrup, K. (2007). The mouse *Engrailed* genes: A window into autism. Behav Brain Res. Jan. 10; 176(1): 121-132.

Herrup, K., Murcia, C., Gulden, F., Kuemerle, B., and Bilovocky, N. (2005). The Genetics of Early Cerebellar Development: Networks not Pathways. Prog. Brain Res. 148: 21-27.

Kuemerle, B., Williams, EA., and Herrup, K. (2004), The *Engrailed-2* Mutant as a Model of the Neuropathology of Autism. Society for Neuroscience Abstract #116.9.

**Publications (continued)**

Kitamura, E., Kuemerle, BA, Chernova OB., Cowell, JK. (2001) Molecular Characterization of the Breakpoint Region Associated with a Constitutional t(2;5) (q34;q26) in a Patient with Multiple Myeloma. *Cancer Genet. Cytogenet.* 129 (2):112-119.

Kuemerle, B., Millen, K., Zanjani, H., Joyner, A. and Herrup, K. (1997). Pattern Deformities and Cell Loss in the Cerebellum of *Engrailed-2* Mutant Mice Suggest Two Separate Patterning Events during Cerebellar Development. *The Journal of Neuroscience.* 17: 7881-7889.

Herrup, K. and Kuemerle, B. (1997). The Compartmentalization of the Cerebellum. *Annual Review of Neuroscience,* 20: 60- 91.

Ewulonu, U.K., Schimenti, K., Kuemerle, B., Magnuson, T. and Schimenti, J. (1996). Targeted Mutagenesis of a Candidate T Complex Responder Gene in Mouse T Haplotypes does not Eliminate Transmission Ratio Distortion. *Genetics,* 144: 785-792.

Kuemerle, B., Maricich, S.M., and Herrup, K. (1996) Regional Variation in the Development of the Deep Cerebellar Nuclei: A Tale of Two Mutants. *Society for Neuroscience Abstract,* #23.14.

Kuemerle, B., Millen, K., Joyner, A. and Herrup, K. (1995). Sagittal Compartments of the Cerebellum are disrupted in *En-2* mutant mice. *Society for Neuroscience Abstract,* #416.9.

Bullard, D., Kuemerle, B., and Schimenti, J. (1992). Functional Evaluation of a T Complex Responder Gene. *International Mouse Genome Conference, abstract.*

**Service-University/College/Department Level:**

Present	Co-Chair, Faculty Senate Committee on Undergraduate Education- Student Life Subcommittee
Present	Student Success Initiative Faculty Advisory Committee (member)
Present	Chair, Department of Biology Awards Committee
Present	Biology Department Curriculum Re-design Committee Member
Present	Advisor for Dean's Approved Neuroscience Major
Present	Neuroscience Major Design Committee member
Present	Natural Science Major Advisor
Present	Pre-Vet Society Faculty Advisor
Present	Sponsor for students enrolled in Biology 388, 388S, and 390 (Independent Research)
Present	Participation in a number of student fraternity/sorority activities (e.g., Anatomy Fashion Show, etc)
Present	Participate in volleyball and basketball teams' annual reception for faculty members
Present	Case Faculty Parents Organization (member)
2017,2018	Student Success Summit Conference (participant)
2017,2018	Participated in screening of candidates for Alexander A. Treuhaft and A. W. Smith Scholarships
2015	Participated in screening of candidates for the Title IX coordinator position
2015	Mentor to master's graduate student (BIOL 302/COGS 322)
2014	Speaking engagement: Presentation to Phi Kappa Tau Fraternity on careers in Biology
2014	Participated in Faculty Candidate Evaluations
2014	Conducted interviews and provided feedback for Pre-Professional Scholars Program
2013-2016	Judge, Research ShowCASE
2013-2014	Mentor to new faculty member for instruction in BIOL 216L, BIOL325
2013	Department of Biology Search Committee member (for 2 instructors)
2011-2014	Department of Biology Seminar Committee (member)
2011, '13, '15	Department representative at The Annual College of the Arts and Sciences Awards Ceremony
2010-2016	Mentor to student instructors (SI) in Biology 216

**Service-University/College/Department Level (continued)**

2010, 2012 Judge, The Michaelson-Morely Undergraduate Research Competition  
2010 Participation in screening of candidates for the Director of Health Careers Advising  
2009-2019 Participation in Biology lab tours and departmental meet-n-greets with prospective students  
2009-2019 Mentor of student teaching assistants in Biol 216L  
  
2009-2019 Write numerous letters of recommendation  
2009-2019 Attend student presentations (SOURCE poster sessions, Research ShowCASE)  
2009-2019 Advisor and/or committee member for undergraduate Honor Theses (Biology)  
2009-2019 Member of graduate level qualifying exam and thesis committees  
2009-2011 Undergraduate Curriculum Committee (member)  
2009-2010 Science Olympiad Event Captain  
2009-2010 Organized Biology Capstone Poster Session  
2007-2008 Faculty advisor to the Undergraduate Biological Society

**Service- Broader Community:**

Present Health Sciences Advisory Board-Committee member, St. Joseph Academy  
Present Volunteer, St. Joseph Elementary School; St. Edward High School  
Present Domestic Violence and Child Advocacy Center of Cleveland-Volunteer activities, supporter  
2015-2018 Children's Miracle Network-Contributor to fundraising endeavors  
2016 10<sup>th</sup> Annual Women's Leadership Symposium, St. Joseph High School- Presenter  
2016 Building Futures Women's Leadership Event, St. Joseph High School- Contributor  
2016 Annual Core Biology Instructor Meeting-Organizer  
2016 Spart-a-thon Fundraiser for Rainbow Hospital- Attendee/Contributor  
2015 Education Advisory Board- committee member, Magnificat High school  
2015 St. John Westshore fundraiser- speaking engagement  
2015 Rainbow Hospital Radiothon fundraiser-speaking engagement  
2015 Domestic Violence & Child Advocacy Center fundraiser-committee member  
2008-2015 Volunteer Coordinator-sports tournaments fundraisers, St. Joseph School  
2013-2014 Biology tutor: Honors Biology, Magnificat High School  
2013 Presidential Search Committee member, Magnificat High School  
2013 Speaking engagement: Career Day Presentation, Magnificat High School  
2012-2013 Speaking engagement: Science Fair Presentation, St. Joseph Elementary School  
2010-2112 Designed and conducted a Summer Science Camp for junior high students  
2012 Mentored junior high students at Lorain County Community College Robotics Tournament  
2012 Advisory panel member for Surround Learning Initiative (Magnificat High School)  
2011 Organized an interactive outreach program with CWRU Engineering and Biology Labs (PI's: Roger Quinn, PhD and Roy Ritzman, PhD) with a junior high school Robotics Club  
2011 Fundraising solicitation: Community Resources Services (CRS) Avon Lake, Ohio  
2010 Outreach Program: conducted a Developmental Biology experiment engaging students at Woodbury Middle School, Shaker Heights OH

**References:**

Christopher Cullis PhD  
Chair, and The Francis Hobart Herrick Professor of Biology  
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