CURRICULUM VITAE

Clare M. O'Connor

EDUCATION

- 1972 B.S. Purdue University, West Lafayette, Indiana
- 1974 Summer Physiology Course, Marine Biological Laboratory, Woods Hole MA
- 1977 Ph.D. Purdue University, West Lafayette, Indiana

POSTDOCTORAL TRAINING

1978-1980 Biology Division, California Institute of Technology, Pasadena CA

1980-1984 Molecular Biology Institute and the Dept. of Chemistry and Biochemistry, University of California, Los Angeles CA

ACADEMIC APPOINTMENTS AND POSITIONS

- 1995-present Associate Professor, Biology Department, Boston College, Chestnut Hill, MA
- 2003-2008 Associate Chair, Biology Department, Boston College, Chestnut Hill, MA
- June, 2008 Instructor, Science Journalism Program, Marine Biological Laboratory, Woods Hole, MA
- 2002-2003 Program Director, Molecular and Cellular Biosciences, National Science Foundation
- 1989-1995 Associate Professor of Biochemistry (adjunct) University of Massachusetts Medical Center, Worcester MA
- 1989-1995 Senior Scientist, Worcester Foundation for Experimental Biology, Shrewsbury, MA
- 1984-1989 Staff Scientist, Worcester Foundation for Experimental Biology, Shrewsbury MA

HONORS AND AWARDS

- 1968-1972 National Merit Scholarship, Purdue University
- 1971 Phi Beta Kappa, Purdue University
- 1972 Percy Singleton Award for outstanding undergraduate research in biology
- 1972 B.S. Degree with highest honors in biology
- 1978-1979 Postdoctoral traineeship in genetics, California Institute of Technology
- 1979-1981 Muscular Dystrophy Association postdoctoral fellowship
- 1981-1983 Advanced research fellowship, Greater Los Angeles Affiliate of the American Heart Association
- 1983-1984 Senior research fellowship, Greater Los Angeles Affiliate of the American Heart Association
- 2001 Elected organizer of FASEB meeting on Biological Methylation
- 2007 Teaching with New Media Award, Boston College
- 2008 Teaching with New Media Award, Boston College

PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science

UNDERGRADUATE EDUCATION ACTIVITIES

2009-present Editor, Scitable, Nature Education online site

- July, 2009 Session leader and author of conference proceedings for AAAS Vision and Change meeting: "Transforming Undergraduate Education in Biology: Mobilizing the Community for Change"
 2011-2016 Core member, CUREnet (Course-based Undergraduate Research Experiences) Research Coordination Network (NSF-funded)
 2014 Invited participant, Designing for Propagation workshop (NSF-funded)
- 2014 Invited participant, Designing for Propagation workshop (NSF-funded) Oct. 3-5, St.Louis MO
- 2016 Invited participant, NSF-funded CREATE (constructivist approach using primary literature to teach biology) workshop, May 20-22, Denver CO

INVITED MEETING PRESENTATIONS

- June, 1985 The biochemistry of S-adenosylmethioinine as a basis for drug design, Bergen, Norway
- May, 1987 First international symposium on the posttranslational modification of proteins and ageing, Ischia, Italy
- Aug.,1993 FASEB conference on The Biochemistry and Pharmacology of Sadenosylmethionine and Methylation, Copper Mountain CO
- July, 1995 FASEB conference on Biological Methylation, Saxtons River, VT
- June, 1997 FASEB conference on Biological Methylation, Saxtons River, VT
- July, 1999 FASEB conference on Biological Methylation, Saxtons River, VT
- July, 2001 FASEB conference on Biological Methylation, Saxtons River, VT
- June, 2006 FASEB conference on Biological Methylation, Saxtons River, VT
- Dec., 2007 Education Initiative Forum, Annual Meeting of American Society for Cell Biology
- Dec. 2013 Education Initiative Forum, Annual Meeting of American Society for Cell Biology
- May, 2015 American Society for Microbiology Conference for Undergraduate Educators

PEER REVIEW COMMITTEES

National Science Foundation, mail reviews

- 1992 NIH Biochemical Endocrinology; Special study section reviewing proposals submitted in response to an RFA on orphan receptors
- 1999 NIH Molecular, Cellular and Developmental Neuroscience-6, Special emphasis panel
- 2002 NSF Molecular Biochemistry review panel, April, 2002
- 2004 NSF IGERT Preproposal review panel, July, 2004
 - (IGERT = Interdisciplinary Graduate Education and Research Training)
- 2004 NSF Metabolic Biochemistry review panel, October, 2004
- 2005 NSF IGERT Full proposal review panel, January, 2005 (IGERT = Interdisciplinary Graduate Education and Research Training)
- 2006 NSF IGERT Preproposal review panel, June, 2005
- 2008 NSF IGERT Preproposal review panel, June, 2008
- 2009 NSF CCLI Review panel, July 2009
 - (CCLI = Course, Curriculum and Laboratory Improvement)
- 2011 NSF-TUES Type II review panel, April 4-5
- (TUES = Transforming Undergraduate Education in Science, Technology, Engineering and Math)
- 2011 NSF- S-STEM review panel, Sept. 22-23
 - (S-STEM = Scholarships in Science, Technology, Engineering and Math)
- 2012 NSF-TUES Type I review panel, July 19-20
- 2016 NSF-IUSE Type I review panel, January 11-12

RESEARCH GRANTS

- 1985-1988 Methylation of atypical protein aspartyl residues, GM35489, National Institutes of Health (average annual direct costs, \$309,618), P.I.
- 1988-1994 Methylation of atypical protein aspartyl residues, AG08109, National Institutes of Health (average annual direct costs, \$670,150), P.I.
- 1995-2001 Methylation of atypical protein aspartyl residues, AG08109, National Institutes of Health (total direct costs \$599,456), P.I.
- 1998 Acquisition of a routine mass spectrometer, National Institutes of Health (\$289,245 direct costs), Co-investigator (T. Ross Kelly, P.I.)
- 1999 Crystallization of a repair enzyme important in aging, Research expense grant, Boston College (\$1500) with Martha M. Teeter, Co-P.I.
- 1999-2002 The chemistry and biology of unusual adaptive solutes in Archaeoglobus fulgidus and Natonococus occultus, MCB-9978250, National Science Foundation, (Total direct costs, \$372,072), Co-investigator (M. F. Roberts, P.I.)
- 2001-2002 Genetic analyses of the physiological roles of a protein repair methyltransferase Research Incentive Grant, Boston College (\$7000), P.I.
- 2003 Repair of oxidized proteins in the model organism, *Schizosaccharomyces pombe*, Boston College (\$1500), P.I.
- 2004-2005 Protein repair in the oxidative stress response, Research Incentive Grant, Boston College (\$15,000), P.I.
- 2007-2011 Yeast and Oxygen: Incorporating functional genomics research into three advanced laboratory courses, NSF0633062, National Science Foundation (total direct costs, \$149, 781), P.I.
- 2011-2015 RCN-UBE: Course-based undergraduate research experiences network (CUREnet), NSF 1154681, National Science Foundation, (\$497,556, core participant)
- 2011-2012 Development of a high performance liquid chromatography (HPLC) method for analyzing sulfur amino acids in yeast; Research Expense Grant, Boston College (\$2000), P.I.
- 2012-2015 Pathways over Time: A research project for the introductory biology laboratory, NSF 114028, National Science Foundation (\$175,050), P.I.

OTHER GRANTS

- 2001 Junior Investigator Participation in FASEB Conference on Biological Methylation, MCB0099623, National Science Foundation (\$10,000).
- 2001 FASEB Research Conference on Biological Methylation, CA91855, National Institutes of Health (\$8000), P.I.
- 2008 Integration of Computer-Based Tools for the Measurement and Analysis of Physiological Function into Advanced Laboratory Courses; Academic Technology Innovation Grant, Boston College (\$20,000.
- 2010 The Genetic Čentury: An Online Resource; Teaching and mentoring grant, Boston College (\$9500).

PEER-REVIEWED PUBLICATIONS

- 1. O'Connor, C.M., and Smith, L.D. 1976. Inhibition of oocyte maturation by theophylline: Possible mechanism of action. *Develop. Biol.* **52**, 318-322.
- 2. O'Connor, C.M., Robinson, K.R., and Smith, L.D. 1977. Calcium, potassium and sodium exchange by full-grown and maturing *Xenopus laevis* oocytes. *Develop. Biol.* **61**, 28-40.
- O'Connor, C.M. 1977. The cyclic AMP content, protein kinase activities and cation fluxes of *Xenopus laevis* oocytes during progesterone-induced maturation *in vitro*. Ph.D. thesis, Purdue University.

- 4. Shih, R.J., **O'Connor, C.M.,** Keem, K., and Smith, L.D. 1978. Kinetic analysis of amino acid pools and protein synthesis in amphibian oocytes and embryos. *Develop. Biol.* **66**, 172-182.
- 5. O'Connor, C.M., and Smith, L.D. 1979. *Xenopus* oocyte cAMP-dependent protein kinases before and during progesterone-induced maturation. *J. Exp. Zool.* 207, 367-374.
- 6. Wasserman, W.J., Pinto, L.H., O'Connor, C.M., and Smith, L.D. 1980. Progesterone induces a rapid increase in [Ca²⁺]_n of *Xenopus* laevis oocytes. *Proc. Natl. Acad. Sci. USA* 77, 1534-1536.
- O'Connor, C.M., Balzer, D.R., Jr., and Lazarides, E. 1979. Phosphorylation of subunit proteins of intermediate filaments from chicken muscle and non-muscle cells. *Proc. Natl. Acad. Sci.* USA 76, 819-823.
- 8. O'Connor, C.M., Gard, D.L., and Lazarides, E. 1981. Phosphorylation of intermediate filament proteins by cAMP-dependent protein kinases. *Cell* 23, 135-143.
- 9. O'Connor, C.M., Asai, D.J., Flytzanis, C.N., and Lazarides, E. 1981. *In vitro* translation of the intermediate filament proteins, desmin and vimentin. *Mol. Cell. Biol.* 1, 303-309.
- Wang, C., Lazarides, E., O'Connor, C.M., and Clarke, S. 1982. Methylation of chicken fibroblast heat shock proteins at lysyl and argininyl residues. J. Biol. Chem. 257, 8356-8362.
- 11. **O'Connor, C.M.,** and Clarke, S. 1983. Methylation of erythrocyte membrane proteins at extracellular and intracellular D-aspartyl sites in vitro: Saturation of intracellular sites in vivo. J. Biol. Chem. **258**, 8485-8492.
- 12. Clarke, S., and **O'Connor, C.M.** 1983. Do eukaryotic carboxyl methyltransferases regulate protein function? *Trends Biochem. Sci.* **8**, 391-394.
- 13. O'Connor, C.M., and Clarke, S. 1984. Carboxyl methylation of cytosolic proteins in intact human erythrocytes: Identification of numerous methyl-accepting proteins including hemoglobin and carbonic anhydrase. J. Biol. Chem. 259, 2570-2578.
- 14. O'Connor, C.M., Aswad, D.W., and Clarke, S. 1984. Mammalian brain and erythrocyte carboxyl methyltransferases are similar enzymes which recognize both D-aspartyl and L-isoaspartyl residues in structurally altered protein substrates. *Proc. Natl. Acad. Sci.* 81, 7757-7761.
- 15. **O'Connor, C.M.,** and Clarke, S. 1985. Analysis of erythrocyte protein carboxyl methylation reactions by two-dimensional gel electrophoresis under acidic separating conditions. *Anal. Biochem.* **148**, 79-86.
- 16. O'Connor, C.M., and Clarke, S. 1985. Wide distribution of a protein methyltransferase which recognizes atypical aspartyl residues. *Biochem. Biophys. Res. Commun.* 132, 1144-1150.
- O'Connor, C.M. 1987. Regulation and subcellular distribution of a protein methyltransferase and its damaged aspartyl substrate sites in developing *Xenopus* oocytes. J. Biol. Chem. 262, 10398-10403.
- O'Connor, C.M., and Germain, B.J. 1987. Kinetic and electrophoretic analysis of transmethylation reactions in intact *Xenopus laevis* oocytes. *J. Biol. Chem.* 262, 10404-10411.
- 19. O'Connor, C.M., and Yutzey, K.E. 1988. Enhanced carboxyl methylation of membrane-associated hemoglobin in human erythrocytes. *J. Biol. Chem.* **263**, 1386-1390.
- 20. O'Connor, C.M., Germain, B.J., Guthrie, K.M., Aswad, D.W., and Millette, C.F. 1989. Regulation of a protein methyltransferase which recognizes damaged aspartyl residues in developing mouse testis and ovary. Evidence for translation during spermiogenesis. *Gamete Res.* 22, 307-319.
- Romanik, E.A., and O'Connor, C.M. 1989. Methylation of isoaspartyl peptide sequences in *Xenopus laevis* oocytes. Competitive inhibition of protein carboxyl methylation. J. Biol. Chem. 264, 14050-14056.
- 22. Desrosiers, R.R., Romanik, E.A., and **O'Connor, C.M.** 1990. Selective carboxylmethylation of structurally altered calmodulins in *Xenopus* oocytes. *J. Biol. Chem.* **265**, 21368-21374.

- 23. Ladino, C.A., and **O'Connor, C.M.** 1990. Protein carboxyl methylation and methyl ester turnover in density fractionated human erythrocytes. *Mech. Ageing Dev.* **55**, 123-137.
- 24. Ladino, C.A., and O'Connor, C.M. 1991. Identification of a site for carboxyl methylation in human α-globin. *Biochem. Biophys. Res. Commun.* **180**, 742-747.
- 25. Ladino, C.A., and O'Connor, C.M. 1992. Methylation of atypical protein aspartyl residues during the stress response of HeLa cells. J. Cell. Physiol. 153. 297-304.
- 26. Romanik, E.A., Ladino, C.A., Killoy, L.C., D'Ardenne, S.C., and O'Connor, C.M. 1992. Genomic organization and tissue expression of the murine gene for the protein β-aspartate methyltransferase. *Gene* 118, 217-222.
- 27. MacLaren, D.C., O'Connor, C.M., Xia, Y., Mehrabian, M., Klisak, I., Sparkes, R.S., Clarke, S., and Lusis, A.J. 1992. The L-isoaspartyl/D-aspartyl protein methyltransferase gene maps to human chromosome 6q22.3-6q24 and the syntenic region of mouse chromosome 10. *Genomics* 14, 852-856.
- 28. Galus, A., Lagos, A., Romanik, E.A., and O'Connor, C.M. 1994. Structural analysis of transcripts for the protein L-isoaspartyl methyltransferase reveals multiple transcription initiation sites and a distinct pattern of expression in mouse testis. Identification of a 5'flanking sequence with promoter activity. Arch. Biochem. Biophys. 312, 524-533.
- 29. O'Connor, C.M. 1994. Analysis of aspartic acid and asparagine metabolism in *Xenopus laevis* oocytes using a simple and sensitive HPLC method. *Mol. Reprod. Dev.* **39**, 392-396.
- 30. O'Connor, M.B., Galus, A., Hartenstine, M., Magee, M., Jackson, F.R., and O'Connor, C.M. 1997. Structural organization and developmental expression of the protein isoaspartyl methyltransferase gene from *Drosophila melanogaster*. *Insect Biochem. Mol. Biol.* 27, 49-54.
- Kagan, R.M., McFadden, H.J., McFadden, P.N., O'Connor, C.M. and Clarke, S. 1997. Molecular phylogenetics of a protein repair methyltransferase. *Comp. Biochem. Physiol.* 117B, 379-385.
- Szymanska, G., O'Connor, M.B., and O'Connor, C.M. 1997. Construction of an epitopetagged calmodulin useful for the analysis of calmodulin-binding proteins. *Anal. Biochem.* 252, 96-105.
- 33. O'Connor, M.B., and O'Connor, C.M. 1998. Complex interactions of the protein Lisoaspartyl methyltransferase with calmodulin detected using the yeast two-hybrid system. *J. Biol. Chem.* 273, 12909-12913.
- Szymanska,G., Leszyk, J.D., and O'Connor, C.M. 1998. Carboxyl methylation of deamidated calmodulin increases its stability in *Xenopus* oocyte cytoplasm: Implications for protein repair. J. Biol. Chem. 273, 28516-28523.
- 35. Chavous, D.A., Hake, L.E., Lynch, R.J., and **O'Connor, C.M.** 2000. Translation of a unique transcript for protein isoaspartyl methyltransferase in haploid spermatids: Implications for protein storage and repair. *Mol. Reprod. Dev*.**56**, 139-144.
- 36. Tarcsa, E., Szymanska, G., Lecker, S., **O'Connor, C.M.,** and Goldberg, A.L. 2000. Ca²⁺-free calmodulin and calmodulin damaged by *in vitro* aging are degraded by 26S proteasomes without ubiquitination. *J. Biol. Chem.* **275**, 20295-20301.
- 37. Chavous, D.A., Jackson, F.R., and O'Connor, C.M. 2001. Extension of the Drosophila lifespan by overexpression of a protein repair methyltransferase. Proc. Natl. Acad. Sci. USA 98, 14814-14818.
- 38. Bennett, E.J., Bjerregaard, J., Knapp, J.E., Chavous, D.A., Friedman, A.M., Royer, W.E., Jr., and O'Connor, C.M. 2003. Catalytic implications from the *Drosophila* protein Lisoaspartyl methyltransferase structure and site-directed mutagenesis. *Biochemistry* 42, 12844-12853.
- 39. **O'Connor, C.M**. 2016. Follow the sulfur: Using yeast mutants to study a metabolic pathway. *Course Source* <u>http://coursesource.org/courses/follow-the-sulfur-using-yeast-mutants-to-study-a-metabolic-pathway-0</u>

- 40. Reeves, T.D., Warner, D.M., Ludlow, L., and **O'Connor, C.M.** 2017. Pathways over Time: Functional genomics research for the introductory laboratory course. *CBE Life Sci. Educ.*, in press.
- 41. Reeves, T.D., Hake, L.E., Chen, X., Frederick, J., Rudenga, K., Ludlow, L., and O'Connor, C.M. 2017. Does Context Matter? Convergent and Divergent Findings in the Cross-Institutional Evaluation of Graduate Teaching Assistant Professional Development Programs CBE Life Sci. Educ., in press.

BOOKS

- Bauerle, C., DePass, A., Lynn, D., O'Connor, C., Singer, S., Withers, M., Anderson, C.A., Donovan, S., Drew, S., Ebert-May, D., Gross, L., Hoskins, S.G., Labov, J., Lopatto, D., McClatchey, W., Varma-Nelson, P., Pelaez, N., Poston, M., Tanner, K., Wessner, D., White, H., Wood, W., and Wubah, D. 2011. Vision and Change in Undergraduate Biology Education: A Call to Action. C. Brewer and D. Smith, Eds. American Assoc. Advancement of Science, Washington, D.C.
- 2. O'Connor, C.M., and Adams, J.U. 2010. Essentials of Cell Biology. NPG Education, Cambridge, MA. http://www.nature.com/scitable/ebooks/essentials-of-cell-biology-14749010
- 3. O'Connor, Clare M. 2011. Investigations in Molecular Cell Biology. (Link through eScholarship@bc.edu)
- 4. O'Connor, Clare M. 2012. Investigations in Molecular Cell Biology. 2nd ed., (Link through eScholarship@bc.edu)
- 5. O'Connor, Clare M. 2013. Investigations in Molecular Cell Biology. 3rd ed., (Link through eScholarship@bc.edu)
- 6. O'Connor, Clare M. 2014. Investigations in Molecular Cell Biology. 4th ed., (Link through eScholarship@bc.edu)
- 8. O'Connor, Clare M. 2015. Investigations in Molecular Cell Biology. 5th ed., (capricorn.bc.edu/bi204)

BOOK CHAPTERS

- O'Connor, C.M., Gard, D.L., Asai, D.J., and Lazarides, E. 1981. Phosphorylation of the intermediate filament proteins, desmin and vimentin, in muscle cells. In *Protein Phosphorylation*, Vol. 8, Cold Spring Harbor Conferences on Cell Proliferation (Eds. E.G. Krebs and O.M. Rosen), pp. 1157-1169.
- Lazarides, E., Granger, B.L., Gard, D.L., O'Connor, C.M., Breckler, J., Price, M., and Danto, S.I. 1982. Desmin and vimentin filaments and their role in the assembly of the Z-disc in muscle cells. *Cold Spring Harbor Symp. Quant. Biol.*46, 351-378.
- 3. Lazarides, E., Gard, D.L., Granger, B.L., O'Connor, C.M., Breckler, J., and Danto, S.I. 1982. Regulation of the assembly of the Z-disc in muscle cells. In *Embryonic Development*, Vol. 85B, *Prog. Clin. Biol. Res.*
- Clarke, S., McFadden, P.N., O'Connor, C.M., and Lou, L.L. 1984. Proteolytic isolation of D-aspartic acid β-methyl ester as a product of the erythrocyte protein carboxyl methyltransferase. *Methods Enzmol.* 106, 330-344.
- 5. O'Connor, Clare M. 2006. Protein L-isoaspartyl/D-aspartyl O-methyltransferases: Catalysts for Protein Repair. In *Protein Methyltransferases*, Vol. 24, The Enzymes (Eds. F. Tamanoi and S. G. Clarke), pp. 383-431.

OTHER PUBLICATIONS

1. O'Connor, C. Chromosomal abnormalities: Aneuploidies. *Nature Education* 1(1), (2008) <u>http://www.nature.com/scitable/topicpage/Chromosomal-Abnormalities-Aneuploidies-290</u> 2. O'Connor, C. Chromosome mapping: Idiograms. *Nature Education* 1 (1), (2008) <u>http://www.nature.com/scitable/topicpage/Chromosome-Mapping-Idiograms-302</u>

3. O'Connor, C. Chromosome segregation in mitosis: The role of centromeres. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Chromosome-Segregation-in-Mitosis-The-Role-of-242 4. O'Connor, C. & Miko, I. Developing the chromosome theory. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Developing-the-Chromosome-Theory-164

5. O'Connor, C. Fluorescence in situ hybridization (FISH). *Nature Education* **1** (1), (2008) <u>http://www.nature.com/scitable/topicpage/Fluorescence-lt-i-gt-In-Situ-lt-327</u>

6. Hake, L. & O'Connor, C. Genetic mechanisms of sex determination. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Genetic-Mechanisms-of-Sex-Determination-314 7. O'Connor, C. Human chromosome translocations and cancer. *Nature Education* **1** (1), (2008) http://www.nature.com/scitable/topicpage/Human-Chromosome-Translocations-and-Cancer-23487

8. O'Connor, C. Karyotyping for chromosomal abnormalities. *Nature Education* 1 (1), (2008) http://www.nature.com/scitable/topicpage/Karyotyping-for-Chromosomal-Abnormalities-298
9. O'Connor, C. Human chromosome number. Nature Education 1(1), (2008) http://www.nature.com/scitable/topicpage/Karyotyping-for-Chromosomal-Abnormalities-298

10. Wing, J. & O'Connor, C. Sex chromosomes in mammals: X inactivation. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Sex-Chromosomes-in-Mammals-X-Inactivation-522 11. O'Connor, C. Trisomy 21 causes Down syndrome. *Nature Education* **1**(1), (2008) http://www.nature.com/scitable/topicpage/Trisomy-21-Causes-Down-Syndrome-318

12. O'Connor, C. Prenatal screen detects fetal abnormalities: PGD and IVF. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Prenatal-Screen-Detects-Fetal-Abnormalities-PGD-and-306

13. O'Connor, C. Chromosome segregation in mitosis: The role of centromeres. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Chromosome-Segregation-in-Mitosis-The-Role-of-242 14. O'Connor, C. Meiosis, genetic recombination, and sexual reproduction. *Nature Education* **1**

(1), (2008)

http://www.nature.com/scitable/topicpage/Meiosis-Genetic-Recombination-and-Sexual-Reproduction-210

15. Telomeres of human chromosomes. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Telomeres-of-Human-Chromosomes-21041

16. O'Connor, C. Mitosis, cell division, and asexual reproduction. Nature Education 1(1), (2008) <u>http://www.nature.com/scitable/topicpage/Mitosis-Cell-Division-and-Asexual-Reproduction-205</u> 17. O'Connor, C. Discovery of DNA as the hereditary material using *Streptococcus pneumoniae*. *Nature Education* **1** (1), (2008)

http://www.nature.com/scitable/topicpage/Discovery-of-DNA-as-the-Hereditary-Material-340

PUBLISHED ABSTRACTS AND POSTERS

- 1. O'Connor, C.M., and Lazarides, E. 1979. Desmin and vimentin phosphorylation by cAMP-dependent kinases. *J. Cell Biol.* **83**, 314a.
- 2. Barber, J.R., Brunauer, L.S., O'Connor, C.M., and Clarke, S. 1981. Carboxyl methylation of cytoskeletal and integral proteins of human erythrocyte membranes. *J. Cell Biol.* **91**, 260a.
- 3. O'Connor, C.M., and Clarke, S. 1983. Carboxyl methylation of erythrocyte cytosol proteins. *Fed. Proc.* **42**, 1912.
- O'Connor, C.M., and Clarke, S. 1985. Methylation of atypical protein aspartyl residues in non-erythroid cells. International Symposium on the Biochemistry of S-Adenosylmethionine as a Basis for Drug Design, Bergen, Norway.
- 5. O'Connor, C.M. 1985. Protein methylation reactions in <u>Xenopus</u> oocytes. J. Cell Biol. 101, 384a.
- 6. O'Connor, C.M. 1986. Protein D-aspartyl, L-isoaspartyl methyltransferase in *Xenopus laevis* oocytes. *Fed. Proc.* **45**, 1710a.
- 7. O'Connor, C.M., and Yutzey, K.E. 1987. Membrane-associated hemoglobin in human red blood cells is enriched in carboxyl methyl esters. *J. Cell Biol.* **105**, 79a.

- 8. Romanik, E.A., and O'Connor, C.M. 1988. Injection of heterologous substrates for protein carboxyl methylation into *Xenopus* oocytes: Competition between isoaspartyl peptides and a methyl-accepting protein. *J. Cell Biol.* **107**, 388a.
- 9. O'Connor, C.M., Killoy, L.C., Ladino, C.A., and Romanik, E.A. 1990. Isolation and characterization of cDNA and genomic clones for the murine protein carboxyl methyltransferase. *J. Cell Biol.* **111**, 120a.
- 10. D'Ardenne-Dansereau, S.C., Killoy, L.C., and O'Connor, C.M. 1991. Structural analysis of the murine gene for the protein carboxyl methyltransferase. *FASEB J.* **5**., A1171.
- 11. Ladino, C. A., and O'Connor, C. M. 1991. Protein carboxyl methylation in HeLa cells during the stress response. *J. Cell Biol.* **115**, 455a.
- Romanik, E. A., Killoy, L. C., Ladino, C. A., D'Ardenne, S. C., and O'Connor, C. M. 1991. Expression of the protein carboxyl methyltransferase gene in murine tissues. *J. Cell Biol.* 115, 152a.
- Galus, A., Lagos, A., Romanik, E. A., and O'Connor, C. M. 1994. Structural heterogeneity of transcripts for the protein L-isoaspartyl methyltransferase in mouse testis. *Mol. Biol. Cell* 5, 91a.
- 14. Galus, A., Jackson, F.R., and O'Connor, C.M. 1995. Characterization of cDNA and genomic clones for a *Drosophila* protein methyltransferase that specifically recognizes age-damaged proteins. *Mol. Biol. Cell* **6**, 86a.
- 15. Arnoult, Č., Galus, A., O'Connor, C.M., Lemos, J.R., and Florman, H.M. 1995. T-type voltage-sensitive calcium channels in mouse spermatogenic cells. *Mol. Biol. Cell* **6**, 428a.
- 16. O'Connor, C.M., O'Connor, M.B., and Jackson, F.R. 1996. Molecular cloning and chromosomal localization of the *Drosophila* protein L-isoaspartyl, D-aspartyl methyltransferase gene. *FASEB J.* 10, A1121.
- 17. Szymanska, G., O'Connor, M.B., and O'Connor, C.M. 1997. Construction and expression of a recombinant calmodulin with a hemagglutinin epitope that can be used to identify calmodulin binding proteins. *Mol. Biol. Cell*, **8**, 31a.
- 18. Chavous, D.A., and O'Connor, C.M. 1999. Developmental regulation and localization of a protein repair methyltransferase in *Drosophila*. *Mol. Biol. Cell*, **10**, 59a.
- Tanini, L.T., Stucenski, K.A., and O'Connor, C.M. 2000. Loss of a protein L-isoaspartyl, (D-aspartyl) O-methyltransferase activity does not affect protein turnover in cultured mouse fibroblasts. FASEB J. 14, A1488.
- 20. Chavous, D.A., Wagner, D.J., Bennett, E.J., and O'Connor, C.M. 2000. Overexpression and characterization of a protein L-isoaspartyl methyltransferase from *Archaeoglobus fulgidis*. *FASEB J.* **14**, A1488.
- 21. Chavous, D.A., Jackson, F.R., and O'Connor, C.M. 2001. Overexpression of a protein repair methyltransferase extends the *Drosophila* lifespan. *Mol. Biol. Cell* **12**, 243a.
- 22. O'Connor, C., Benakis, K., Northern, L., and Plodkowski, A. 2004. The *pcm2* gene in *Schizosaccharomyces pombe* encodes a protein L-isoaspartyl methyltransferase activity induced during stationary phase. *FASEB J.* **18**, C278.
- 23. O'Connor, C.M., Piatelli, M.J., and Wyman, A.R. 2006. Incorporation of an original research theme into there advanced undergraduate laboratory classes in cell biology, molecular biology and biochemistry. *Mol. Biol. Cell* **17**, 1949a.
- 24. O'Connor, C.M. 2007. Yeast and oxygen: Building an undergraduate research community around a common research theme. *Mol. Biol. Cell* **18**, 1748a.
- 25. O'Connor, C.M. 2008. Boston College Biology Commons: A website for integrating advanced laboratory courses and a community resource for educators and students. *Mol. Biol. Cell* **19**, 1560a.
- 26. Rosenberg, J.A., Wing, J.P., and O'Connor, C.M. 2010. Yeast and oxygen: An integrated approach to a research problem in functional genomics. *Mol. Biol. Cell* **21**, 4299.
- 27. O'Connor, C.M. 2011. Pathways over Time: An adaptable project in functional genomics for introductory laboratory classes. *Mol. Biol. Cell* **22**, 4705.

- Warner, D.M., Hake, L.E., and O'Connor, C.M. 2013. Redesign of a multi-section introductory laboratory course to incorporate an authentic research project in functional genomics. J. Microbiol. Biol. Educ. 14: 156.
- 29. Hake, L.E., Reeves, T., Chen, X., Frederick, J., Ludlow, L., Miyazaki, J., O'Neal III, M., Rudenga, K., Spikes, D., and O'Connor, C.M. 2013. Scientific Teaching Alliance for Future Faculty (STAFF): a regional collaboration to improve graduate teaching assistant training. (Conference presentation: SABER - Society for the Advancement of Biology Education Research, Minneapolis, MN, July, 12-14, 2013)
- 30. Warner, D.M., Hake, L.E., and O'Connor, C.M. 2013. Pathways over Time: An introductory laboratory course involves large numbers of biology students in an authentic research project in comparative genomics. *Vision and Change in Undergraduate Biology: Chronicling the Change* (Conference proceedings, Aug. 2013)
- Wolyniak, M.J., Warner, D.M., and O'Connor, C.M. 2013. Inquiry-based introductory laboratory in functional genomics is adaptable to different institutional settings. *Mol. Biol. Cell* 24 (suppl): 1035.
- 32. Rowedder, H., O'Connor, C.M., and Warner, D.M. 2014. Increases in core concept knowledge within a comparative genomics multi-section introductory laboratory class. *J. Microbiol. Biol. Educ.* **15**: 67.
- 33. Warner, D.M., Reeves, T.D., Wolyniak, M.J., and O'Connor, C.M. 2014. Redesign of a multisection introductory laboratory class to incorporate an authentic research project in comparative genomics. (Conference presentation: CUREnet, Cold Spring Harbor, NY, March 31-April 2, 2014)
- 34. Reeves, T. D., Ludlow, L. H., Warner, D. M., and O'Connor, C. M. 2014. Changes in undergraduate student content knowledge and research methods skills during a research course in molecular cellular biology. (Conference presentation: SABER - Society for the Advancement of Biology Education Research, Minneapolis, MN, July, 17-20, 2014)
- 35. Warner, D.M., Reeves, T.D., Wolyniak, M.J., and O'Connor, C.M. 2014. Pathways over Time: An adaptable course based undergraduate research experience for introductory students. (Conference presentation: SABER - Society for the Advancement of Biology Education Research, Minneapolis, MN, July, 17-20, 2014)
- 36. O'Connor, C.M., and Warner, D.M. 2015. Pathways over Time: a semester-long research investigation for the introductory laboratory. *FASEB J.* 29: 6598.
- 37. Rowedder, H., Warner, D.M., Reeves, T.D., and O'Connor, C.M. 2015. Participation in a functional genomics project in a large introductory laboratory class increases student content knowledge and research methods skills. J. Microbiol. Biol. Educ. 16 (1) DOI: <u>http://dx.doi.org/10.1128/jmbe.v16i1.932</u>
- 38. O'Connor, C.M., and Warner, D.M. 2016. Research for all: Large introductory laboratory classes investigate the evolutionary conservation of metabolic pathways. FASEB J.

SEMINARS AND PRESENTATIONS

- June, 1986 Dept. of Biological Sciences, Purdue University
- Feb., 1987 Division of Reproductive Biology, Univ. of Pennsylvania School of Medicine
- Feb., 1988 The New York Blood Center, New York, NY
- Oct., 1988 Dept. of Biochemistry, U. Massachusetts Medical Center
- Jan., 1990 Dept. of Physiology, U. Massachusetts Medical Center
- Dec., 1990 Molecular Biology Institute, Univ. California at Los Angeles
- Dec., 1990 Dept. of Biological Chemistry, Univ. California at Irvine
- Feb., 1991 Dept. of Biology, Clark University
- April, 1994 Dept. of Obstetrics and Gynecology, Harvard Medical School
- Sept., 1994 Dept. of Biology, Boston College

Oct., 1994	Reproductive Biology Division, Tufts Medical School
Jan., 1995	Boehringer Ingelheim, Ridgefield CT
Nov. 1996	Dept. of Biology, University of Massachusetts
April, 1997	Biochemistry group, Dept. of Chemistry, Boston College
June, 2000	Dept. of Opthalmology, Tufts University School of Medicine
July, 2001	Dept. of Chemistry and Biochemistry, UCLA
Jan., 2002	Dept. of Pathology, Brown University
Jan., 2002	Molecular and Cellular Biosciences Division, National Science Foundation
Feb., 2003	Dept. of Biochemistry, Georgetown University School of Medicine
April, 2005	Dept. of Biology, Worcester Polytechnic Institute
Feb., 2006	Dept of Biochemistry, Boston University School of Medicine
July, 2006	Whitehead Institute, Massachusetts Institute of Technology
Dec., 2007	Educational Initiative Forum, American Society for Cell Biology annual mtg.
March, 2009	Faculty panel, The Vagina Monologues, Boston College
March, 2010	Intersections lunch break, "The Changing Faces of Research," Boston College
Dec., 2013	Education workshop, Annual Meeting Amer. Soc. Cell Biol., New Orleans LA

TEACHING AND TRAINING ACTIVITIES

Undergraduate courses taught at Boston College:

BI102 Survey of Biology II – Spring, 2005-2006 (100-300 students) BI142 (BIOL1420) The Genetic Century – Spring, 2008; Fall, 2009-2010; Spring 2012-4, Spring and Fall, 2016 (70-150 students) BI200 Introductory Biology, Fall, 2000 (180 students) BI204 (BIOL2040) Investigations in Molecular Cell Biology, fall and spring, 2010- May 2014 (180 students) BI215 Biotechnology and Medicine, Fall semesters, 1996-1997 (30-60 students) BI304 Molecular and Cellular Biology, Fall semesters, 1997-9, 2005-2007 (150 students) BI305 Genetics, Spring semesters, 2000-2007 (230 students) BI480 Biochemistry Laboratory, Fall and spring, 2007-9 (7-13 students) BI482 Cell Biology Laboratory, Fall semesters, 2004-2007 (10-15 students) BI483 Molecular Biology Laboratory, Spring 2008 (12 students) BI484 Research in Biochemistry Laboratory, Fall and spring, 2010-present (12 students) BIOL4801 Research in Molecular Cell Biology, Fall, 2016 (9 students) and Spring, 2017 BI496-7 Biology Honors Seminar I & II, 2005-2007; 2013-2014 (8-12 students) BIOL4941-2 Biology Thesis Seminar I & II, 2013-4 (15 students) BI509 Vertebrate Cell Biology, spring semesters, 1996-9 BI554 Physiology, Fall, 2004 (30 students) BI580 Molecular Biology Laboratory, Spring 2005 (12 students) UN245 Freshman Topic Seminar, Fall semesters, 2004-2006, 2009; 2012-4 (12-14 students)

Graduate courses at Boston College (12-20 students)

BI600-1 Graduate Core Biology (team taught), 1998-2000

BI604 Advanced Biochemistry, Boston College, fall semesters, 1995-6

BI612 Graduate Biochemistry, Fall semesters, 2003-4

BI830 Seminar in Cell Biology: Biology of Aging, Spring 1997

BI830 Seminar in Cell Biology: Proteolytic Mechanisms in Cell Biology, Spring, 2000

Mentored and supervised research at Boston College:

Postdoctoral trainees:

Elizabeth Romanik, 1986-1991

Cynthia Ladino,1989-92 Susan Dansereau, 1990-2 Richard Desrosiers, 1989-1990 Chandrashekar Ganesa, 1992-3 Miriam B. O'Connor, 1995-1998 Grazyna Szymanska, 1996-9

Ph.D. students mentored

David A. Chavous, 1996-2001 Linda S. Tanini, 1998-2006 Dean Wagner, 1999-2006

M.S. students mentored

Veronica Eckstein, 1996-1998 Rebecca A. Sanford, 1996-1998 Joanna R. Beinhorn, 1996-1999 Jens Bjerregaard, 2000-2002

Scholars of the College mentored

Matthew R. Tulis, 1997 Raymond J. Lynch, 1999 Eric J. Bennett, 2001 Luke Northern, 2003 Kristen Benakis, 2004 Lauren Sakai, 2005

Senior thesis projects, Boston College

Sean Uiterwyk, 1996 Colleen Horan, 1996 Richard Gosselin, 1998 Ashley Walther, 2006 Scott Davis, 2006 James Casey, 2006 Matthew Dolan, 2008 Jason Saunders, 2008 Radley Short, 2008 Rebecca Sherwood, 2008 Elizabeth Denham, 2008 Allison Whalen, 2009 David Bluhm, 2009 Alexandra DiGiogio, 2009 Jeffrey Cooney, 2009 Derek Missert, 2010 Natasha Romero, 2010 Kathleen Soltis, 2010 Matthew King, 2012 Michael Lim, 2013

Undergraduate Research:

Undergraduate	Major
Sean Uiterwyk	Biology
Colleen Horan	Biology
Matthew Tulis	Biology

Year Postgraduate activities

'96 Physician'96 Physician'97 Physician

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Dishand Cosselin	Dialagy	100 Dhysisian
Richard Gosseilli Devree and Lynch	Diology	90 MD/Dh D. Vala University
Kaymond Lynch	Biology	⁹⁹ MD/Ph.D., Yale University
William Kerrigan	Biology	
Keri Stucenski	Biology	99 Dental student, U. Connecticut
Eric Bennett	Biochemistry	² 01 Postdoc, Harvard Med. School
Lori Bourassa	Biology	'01 Graduate student, Tufts University
Andrew Plodkowski	Biology	'02 Medical student, Loyola University
Ryan Erbeck	Biology	'02
Tracy Zeldis	Biology	'03 Veterinary school, U. Pennsylvania
Rob Hamanaka	Biology	'03 Graduate school., U. Pennsylvania
Luke Northern	Biology	'03 Medical student, Loyola University
Damien Larock	Biology	'04 Graduate student, ColumbiaUniversity
Kristine Pattin	Biology	'04 Graduate student, Dartmouth College
Kristin Benakis	Biology	'05
Heather DeFoer	Biology	'05 Technician, Charles River Labs
Alisha Cutler	Biochemistry	'05 Medical student, Georgetown Univ.
Ashley Walther	Biology	'06 Medical student, Loyola University
Scott Davis	Biology	'06 Graduate student, Drexel University
James Casey	Biology	'06 Graduate student, U. Pennsylvania
Thomas Martz	Biochemistry	'07 Laboratory technician
Meghan Rice	Biology	'07 Asst. lab manager, Boston College
Matthew Dolan	Biology	'08 Emergency medical technician
Riley McLean	Biochemistry	'08 Secondary school teacher
Jason Saunders	Biology	'08 Medical school
Radley Short	Biology	'08 Laboratory technician
Allison Whalen	Biology	'09 Medical school
Pilar Landon	Biology	'09
David Bluhm	Biology	'09
Alexandra DiGiorgio	Biology	'09 Research technician
Paul Symansky	Biology	'09
Natasha Romero	Biology	'10
Derek Missert	Biology	'10 Graduate student, Mt. Sinai Med. Ctr.
Michael Lim	Biology	'13
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K-12 educational activities:

Supervised research of high school science teachers with summer fellowships (WFEB): Leonard Palmer, Bedford High School

- Ernest Nicol, Newton North High School
- Developed and taught "Cells, Genes and DNA for Adults", Adult education program, Shrewsbury Public Schools, 1994
- Secondary school certification, biology and chemistry, Commonwealth of Massachusetts
- Member of the advisory board, Regional Science Resource Center, Worcester Foundation for Experimental Biology, 1994-1996
- Member of the Scientific Advisory Committee for the Shrewsbury Public Schools
- Organizer and coordinator, St. John's High School science mentor program, 1993-1996
- Regional problem captain and judge, Odyssey of the Mind program, 1994-1997
- Judge, Worcester County Science Fair, 1992-1995, 1997, 2000, 2002, 2004, 2007
- Volunteer reader, Boston College Read-Aloud program at the Garfield elementary school, 2003-2004.

Speaker, Science Divas, Balch Middle School, Norwood, April 14, 2008

Speaker, Millipore Women in Science Competition, Bedford High School, May 10, 2008

BOSTON COLLEGE SERVICE

Biology Department:

Seminar Chairman, 1996-1998 Graduate Committee, 1996-2001 Graduate Program Director, 1998-2001 Undergraduate Program Committee, 1998-present Space Committee, 2001-2004 Organizer and coordinator, Molecular and Cellular Biology Journal Club, 2003-4 Executive Committee, 2004-2006 Associate Chair and Undergraduate Program Director, 2004-2008 Faculty liaison with the University library, 2008-present

College and University:

Radiation Safety Committee, 1995-1997 MS/MBA Coordinator for Biology, 1996-present Academic Vice President (Provost) Advisory Committee, 2000-2003, 2005-2007 Undergraduate Educational Policy Committee, CA&S, 2001-2004, 2007-present President, Omicron chapter of Phi Beta Kappa, 2002-2011; Treasurer, 2011-present Academic Integrity Committee, 2003-2005; 2010-present Faculty Elections Committee, 2003-2007 Undergraduate Core Curriculum Committee, 2004-2007 Academic Technology Advisory Board, 2009-present; Chair, 2016-present Selection committee, new Web content management system, 2009 Faculty Staff immersion trip to Nicaragua, May, 2009 Halftime retreats, September, 2009; November, 2010 Advanced Study Grants review committee, 2010 Faculty focus group, Information Technology Services administrative program review, 2010 Environmental Studies steering committee, 2010-2014 Moderator, Faculty Microcomputer Resource Center, 2012-present Common Room, Intersections faculty seminar, June, 2011; Jan. 8-10, 2014 Canvas Learning Management System advisory committee, 2013-present Villa Retreat, June 10-14, 2013; June 8-12, 2015 Medical Humanities minor steering committee, 2013-present IT Service Management Advisory Committee, 2015-present ITS Project Review Committee, 2016-present

COMMUNITY ACTIVITIES

Elected town meeting member, 1991-present Appointed member, Solid and Hazardous Waste Committee, Town of Shrewsbury, 1992-3 (Committee drafted a bylaw subsequently adopted by the town)

(Committee drafted a bylaw subsequently adopted by the town)

Board of Directors, Shrewsbury Community Services, 1993-1998 CCD teacher, St. Mary's Church, Shrewsbury, 1989-1999

Board of Directors, Regatta Point Community Sailing, 1993-1995

Appointed member, Floral St. School Building Committee, Town of Shrewsbury, 1994-1997

Appointed member, Finance Committee, Town of Shrewsbury, 1997-2013

Chairman, Shrewsbury Finance Committee, 2005-6; 2011-2013

Elected member, Board of Library Trustees, Town of Shrewsbury, 2014-present