

## RESUME OF DR. MICHAEL MCCONNELL

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**NAME:** Michael Raymond McConnell

**DATE AND PLACE OF BIRTH:** March 8, 1949, Porterville, California

**ADDRESS:** Department of Biology  
Point Loma Nazarene University  
3900 Lomaland Drive  
San Diego, CA 92106

**TELEPHONES:**  
Home (858) 571-8721  
Office (619) 849-2304  
**FAX:** (619) 849 2598  
**Email:** [mmcconne@pointloma.edu](mailto:mmcconne@pointloma.edu)

### **EDUCATION**

**1976-78** Postdoctoral Fellow, Department of Pharmacology, Harvard Medical School, Boston, MA. Laboratory of Dr. Peter M. Blumberg, Effects of transformation by Rous sarcoma virus on cell surface structure in chick embryo fibroblasts (involved extensive work with <sup>35</sup>S and <sup>125</sup>I radioisotopes).

**1971-76** Ph.D., Department of Molecular Biology and Microbiology, Tufts University, Boston, MA. Laboratory of Dr. Andrew Wright, Initial Interactions between Bacteriophage E15 and its Host Cell, *Salmonella anatum* (involved extensive work with <sup>35</sup>S, <sup>14</sup>C, <sup>32</sup>P and <sup>3</sup>H radioisotopes)

**1967-71** B.A., Department of Chemistry, (cum laude), Pasadena/Point Loma Nazarene College; (included two years of fulltime summer research with Dr. Victor Heasley on addition of acylhyphalites to alkenes with resulting publications in **Tetrahedron Letters** and the **Journal of Organic Chemistry**)

### **SABBATICAL EXPERIENCES:**

**2016** Visiting Scholar, Centro Nacional de Biotecnologia, Madrid, Spain. Laboratory of Dr. Mark van Raaij

**2008-2014** Visiting Scholar, Department of Molecular Biology, The Scripps Research Institute, La Jolla, CA. Laboratory of Dr. Jack Johnson

**2007** Visiting Scholar, Laboratory for Foodborne Zoonoses, Public Health Agency of Canada, Guelph, Ontario, Laboratory of Dr. Andrew Kropinski, Annotation of the genome of Salmonella bacteriophage g341.

**2007** Visiting Scholar, Sydney Kimmel Cancer Center, La Jolla, CA. Laboratory of Dr. Michael McClelland, Characterization of the genome of Group E Salmonellae bacteria

**2001** Visiting Scholar, Department of Medicine, U.C. San Diego, CA. Laboratory of Dr. Donald Guiney, O-Polysaccharide Polymerase Enzymes in Group E Salmonella enterica bacteria

**1994** Visiting Scholar, Department of Molecular Biology, The Scripps Research Institute, La Jolla, CA, Laboratory of Dr. Gerald Joyce, Research dealing with molecular evolution of ribozymes (involved extensive use of <sup>32</sup>P and a brief refresher course on proper use of radioisotopes)

**1994** Visiting Scholar, Department of Microbiology, The University of Sydney, New South Wales, Australia. Laboratory of Dr. Peter Reeves, Research on evolutionary relationships between lipopolysaccharide biosynthesis gene clusters found in enteric bacteria and their phages

**1985-86** Visiting Scholar, Laboratory of Dr. Masaki Hayashi, U.C. San Diego, CA. Factors determining messenger RNA stability (extensive work with <sup>35</sup>S)

**1983** Visiting Scholar, Laboratory of Dr. Ivor Royston (co-founder of Hybritech), U.C. San Diego Medical Center, San Diego, CA. Monoclonal antibodies to immunoglobulin idiotypic antigens

### **EMPLOYMENT EXPERIENCES:**

**2014- present** Liaison for PLNU with BIOCUM and CONNECT

**2014 - present** Professor Emeritus of Biology, Point Loma Nazarene University, San Diego, CA

**1987-2014** Professor of Biology, Point Loma Nazarene University, San Diego, CA

**1987-92** Chair, Department of Biology, Point Loma Nazarene University, San Diego, CA

**1981-86** Associate Professor of Biology and Chemistry, Point Loma Nazarene University, San Diego, CA

**1978-81** Assistant Professor of Biology and Chemistry, Point Loma Nazarene University, San Diego, CA.

**1975-76** Instructor in genetics and cell physiology, Eastern Nazarene College, Quincy, MA

## **OTHER PROFESSIONAL SERVICES AND ACCOMPLISHMENTS**

**2018-2019** Co-Organizer (with LeAnne Elizondo) of the 21<sup>st</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2017-2018** Co-Organizer (with LeAnne Elizondo) of the 20<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2016-2017** Co-Organizer (with LeAnne Elizondo) of the 19<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2016** Co-Organizer (with LeAnne Elizondo) of the 41<sup>st</sup> Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 9, 2016)

**2015-2016** Co-Organizer (with LeAnne Elizondo) of the 18<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2015** Principle Organizer of the 40<sup>th</sup> Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 25, 2015)

**2014-2015** Co-Organizer (with LeAnne Elizondo) of the 17<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2013** Journal Article Referee *World Journal of Gastroenterology*, Baisheding Publishing, China

**2013-2014** Co-Organizer (with LeAnne Elizondo) of the 16<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2013** Principle Organizer of the 38<sup>th</sup> Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 20, 2013)

**2012-2013** Co-Organizer (with LeAnne Elizondo) of the 15<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2012** Co-Organizer (with LeAnne Elizondo) of the 67<sup>th</sup> Annual Meeting of the American Scientific Affiliation, Point Loma Nazarene University, San Diego, CA (July 20-July 23, 2012)

**2012 to 2018** Editorial Board Member, *World Journal of Virology*, Baishideng Publishing Group, Hong Kong and Beijing, China

**2011-2012** Co-Organizer (with LeAnne Elizondo) of the 14<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2010-2011** Co-Organizer (with LeAnne Elizondo, Darrel Falk and Dawne Page) of the 13<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2009-2010** Co-Organizer (with Darrel Falk and Dawne Page) of the 12<sup>th</sup> Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2009** Principle Organizer of the 34<sup>th</sup> Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 20, 2009)

**2008-2009** Co-Organizer (with Darrel Falk and Dawne Page) of the Eleventh Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2008** Principle Organizer of the 33<sup>rd</sup> Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 12, 2008)

**2007-2008** Co-Organizer (with Darrel Falk and Dawne Page) of the Tenth Annual “Perspectives on Science” Seminar Series for San Diego County Community College, High School, Middle School and Elementary School Science Teachers, Point Loma Nazarene University

**2006-2007** Co-Organizer (with Darrel Falk and Dawne Page) of the Ninth Annual “Perspectives on Science” Seminar Series for San Diego County High School and Middle School Science Teachers, Point Loma Nazarene University

**2006** Principle Organizer of the 31<sup>st</sup> Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 29, 2006)

**2005-2006** Co-Organizer (with Darrel Falk and Dawne Page) of the Eighth Annual “Perspectives on Science” Seminar Series for San Diego County High School and Middle School Science Teachers, Point Loma Nazarene University

**2004-2005** Co-Organizer (with Darrel Falk and Dawne Page) of the Seventh Annual “Perspectives on Science” Seminar Series for San Diego County High School and Middle School Science Teachers, Point Loma Nazarene University

**2004** Principle Organizer of the 29th Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 24, 2004)

**2003-2004** Co-Organizer (with Darrel Falk and Dawne Page) of the Sixth Annual “Perspectives on Science” Seminar Series for San Diego County High School and Middle School Science Teachers, Point Loma Nazarene University

**2003-present** Faculty Representative for the Biology Department to the Board of Research Associates of PLNU <http://www.pointloma.edu/experience/academics/schools-departments/department-chemistry/alumni/research-associates>

**2002-2003** Co-Organizer (with Darrel Falk) of the Fifth Annual “Perspectives on Science” Seminar Series for San Diego County High School and Middle School Science Teachers, Point Loma Nazarene University

**2001-2002** Co-Organizer (with Darrel Falk) of the Fourth Annual “Perspectives on Science” Seminar Series for San Diego County High School Science Teachers, Point Loma Nazarene University

**2000-2001** Co-Organizer (with Darrel Falk) of the Third Annual “Perspectives on Science” Seminar Series for San Diego County High School Science Teachers, Point Loma Nazarene University

**2000** Principle Organizer of the 25th Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene University, April 29, 2000)

**1999-2000** Co-Organizer (with Darrel Falk) of the Second Annual “Perspectives on Science” Seminar Series for San Diego County High School Science Teachers, Point Loma Nazarene University

**1998-99** Co-Organizer (with Darrel Falk) of the First Annual “Perspectives on Science” Seminar Series for San Diego County High School Science Teachers, Point Loma Nazarene University

**1999** Convener for Section on Cell Biology, Endocrinology and Genetics, 24<sup>th</sup> Annual West Coast Biological Sciences Undergraduate Research Conference, U.C. Irvine, Irvine, CA

**1997** Convener for Section on Biochemistry and Enzymology, 22<sup>nd</sup> Annual West Coast Biological Sciences Undergraduate Research Conference, Loyola Marymount University, Los Angeles, CA

**1996** Principle Organizer of the 21st Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene College, April 27, 1996)

**1992** Journal article referee, **Canadian Journal of Microbiology**.

**1992** Principle Organizer of the 17th Annual West Coast Biological Sciences Undergraduate Research Conference (Point Loma Nazarene College, May 2, 1992)

**1986** Convener of the Molecular Biology Section for the Eleventh Annual West Coast Biological Sciences Undergraduate Research Conference, held at Occidental College, CA

**1985** Convener of Microbiology Section, Tenth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA

**1983** Chair of Genetics Section, Eighth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA;

### **HONORS AND GRANTS**

**2014** Distinguished Achievement Award (Point Loma Nazarene University Alumni Association) (November 22, 2014)

**2014** Elected Professor Emeritus of Biology by the PLNU Board of Trustees

**2010** Alumnus of Point Loma (APL) Award (November 19, 2010)

**2010** PLNU Alumni Grant (\$2,000)

**2008** Co-recipient (with Darrel Falk, Dawne Page and Dianne Anderson) of the “Sustainable Program Partnership Award”, presented by the San Diego Science Alliance (June, 2008), in recognition of the POS Program.

**2003** Co-Recipient (with Darrel Falk) of the award for “University Service to the San Diego K-12 Educational Community”, presented by San Diego Science Educators’ Association, June 4<sup>th</sup>, 2003, in recognition of the POS Program

**1994-98** NIH AREA Grant (\$85,430); “Lipopolysaccharide Modification by Phage Epsilon 15”

**1990** PLNC Alumni Association Teaching Development Award (\$1,500)

**1988** NSF Research in Undergraduate Institutions REU Supplement Grant (\$7,425); "Cell Surface Conversion Mechanism of Bacteriophage E15"

**1987** NSF Research in Undergraduate Institutions REU Supplement Grant (\$6,000); "Cell Surface Conversion Mechanism of Bacteriophage E15"

**1986-89** NSF Research in Undergraduate Institutions Grant (\$87,395); "Cell Surface Conversion Mechanism of Bacteriophage E15"

**1986** Research Corporation Grant (\$8,500), "Cloning and Characterization of the Cell Surface Conversion Genes of Bacteriophage E15";

**1985** NSF College Science Instrumentation Program (\$14,783); NSF Research Instrumentation Grant (coauthor) (\$43,000);

**1984** PLNC Research and Special Projects Fund (RASP), (\$1,000); Research Corporation/Cottrell College Science Grant (\$7,400)

**1983** NSF Two-Year and Four-Year College Research Instrumentation Program (Coauthor) (\$23,000)

**1983** Voted “Most Inspirational Professor” by Point Loma College graduating seniors (Class of '83)

**1982-83** Research Corporation/Cottrell College Science Grant (\$12,300)

**1982** Research Corporation Research Instrumentation Grant (Coauthor) (\$6,000)

**1981** PLC Alumni Association Teaching Development Award (\$1,000)

**1980-81** Research Corporation/Cottrell College Science Grant (\$10,600)

**1980** NSF Research Instrumentation Grant (Coauthor) (\$22,000)

**1979** (RASP) PLC Research and Special Projects Fund (\$1,300); NSF Instructional Scientific Equipment Program (Coauthor) (\$7,100); Cystic Fibrosis Foundation Undergraduate Traineeship Grant (\$1,500)

**1976** Recipient of Alumnus of Point Loma (APL) Award (June 5, 1976)

### **PROFESSIONAL MEMBERSHIPS:**

American Society for Microbiology, 1973-2014

Council on Undergraduate Research, 2010-2014

### **PUBLICATIONS:**

**A. DOCTORAL DISSERTATION** McConnell, M.R., (1976), “Multiple steps are involved in the irreversible attachment of bacteriophage E15 to its host cell, Salmonella anatum," Ph.D. Thesis, Tufts University, Boston, MA

### **B. BACTERIOPHAGE GENOMES SEQUENCED:**

1. Bacteriophage Epsilon 15: <http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=215158>

2. Bacteriophage g341c: <http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=590739>

### **C. BOOK CHAPTERS**

1. Wright, A., M. McConnell and S. Kanegasaki (1980), "Lipopolysaccharide as phage receptor", in Virus Receptors (L. Randall and L. Phillipson, eds.), London: Chapman and Hall, Ltd., pp. 27-58

2. Los, Marcin, John Kuzio, Michael McConnell, Andrew Kropinski, Grzegorz Wegrzyn and Gail Christie (2010). Lysogenic conversion of bacteria of importance to the food industry, pp 157-198. In Parviz Sabour and Mansel Griffiths (ed.), *Bacteriophages in the control of food- and waterborne pathogens*, ASM Press, Washington, D.C.

**D. JOURNAL ARTICLES** (asterisks denote PLNU undergraduate coauthors)

1. Heasley, V., G. Heasley, M. McConnell, K. Martin, D. Ingel, and P. Davis (1971), "The reactions of hypochlorites with olefins in nitromethane", *Tetrahedron Letters* 50:4819-4822
2. Heasley, V., G. Heasley, R. Loghry and M. McConnell (1972), "Comparisons of the reactions of butadiene with chlorine, bromine, acetyl hypochlorite and acetyl hypobromite", *Journal of Organic Chemistry* 37:2228-2231
3. McConnell M., and A. Wright (1975), "An anaerobic technique for increasing bacteriophage plaque size", *Virology* 65:588-590
4. McConnell, M. R., and P.M. Blumberg (1978), "Subunit structure of surface and shed large, external, transformation-sensitive protein of chick embryo fibroblasts", *Annals of the New York Academy of Sciences* 312:418-419
5. McConnell, M.R., P.M. Blumberg and P.W. Rossow (1978), "The oligomeric structure of the large external transformation-sensitive protein (LETS) of chick embryo fibroblasts", *Journal of Biological Chemistry* 253:7522-7530
6. McConnell, M.R., A. Reznik and A. Wright, (1979), "Studies on the initial interaction of bacteriophage E15 with its host cell, Salmonella anatum", *Virology* 94:10-29
7. McConnell, M.R., and A. Wright, (1979), "Changes in the phage-inactivating capacity of Salmonella anatum lipopolysaccharide due to growth temperature and mutation". *Journal of Bacteriology* 137:746-751
8. McConnell, M.R., D.D. McAbee\*, L.E. Heasley\* J.E. Schoelz\*, D. Reel Harlow\* and D.R. Starn\* (1982), "Bacteriophage E15 is released intact from the surface of its host cell, Salmonella anatum, at acidic pH". *Virology*, 116:650-653
9. McConnell, M.R. and P.M. Blumberg (1982) "Transformation of chick embryo fibroblasts by Rous Sarcoma Virus does not inhibit the assembly of fibronectin into reduction-sensitive dimer and high molecular weight complex". *Cytobios* 33:89-102
10. McConnell, M.R. and J.E. Schoelz\* (1983). "Evidence for shorter average O-polysaccharide chainlength in the lipopolysaccharide of a bacteriophage Felix O1-sensitive variant of Salmonella anatum Al." *J. Gen. Microbiol.* 129:3177-3184.
11. McConnell, M.R., B.D. Foster\*, D.P. Davis\*, B. Kat\*, J.G. Blair\*, R.A. Long\* and M.M. Steed\* (1986). "A spontaneously-produced lipopolysaccharide biosynthetic defect that causes both pleiotropic phage resistance and mucoid colony morphology in Salmonella anatum, *Microbios* 48:135-158
12. Hayashi, Marie N., Reza Yaghmai, Michael McConnell and Masaki Hayashi (1989). "mRNA stabilizing signals encoded in the genome of the bacteriophage PhiX174," *Molec. and Gen. Genetics* 216:364-371
13. McConnell, M.R., B. Walker\*, P. Middleton\*, J. Chase\*, J. Owen\*, D. Hyatt\*, H. Gutierrez\*, M. Williams\*, D. Hambright\*, M. Barry, Jr. \*, S. Sage\*, G. Fuller\*, M. Birdwell\*, M. Rydelski\*, S. Risley\* and B. Kat\* (1992). "Restriction Endonuclease and Genetic Mapping Studies Indicate that the Vegetative Genome of the Temperate Salmonella-Specific Bacteriophage, Epsilon 15, is Circularly-Permuted", *Archives of Virology* 123:215-221

14. McConnell, M.R., Oakes\*, K.R., Patrick\*, A. N. and Mills\*, D.M. (2001). "Two functional O-polysaccharide polymerase wzy (rfc) genes are present in the rfb gene cluster of Group E1 Salmonella enterica serovar Anatum". *FEMS Microbiology Letters* 199(2), 235-240
15. Andrew M. Kropinski, Irina V. Kovalyova, Stephen J. Billington, Aaron N. Patrick\*, Brent D. Butts\*, Jared A. Guichard\*, Trevor J. Pitcher\*, Carly C. Guthrie\*, Anya D. Sydlaske\*, Lisa M. Barnhill\*, Kyle A. Havens\*, Kenneth R. Day\*, Darrel R. Falk and Michael R. McConnell (2007). "The Genome of  $\epsilon$ 15, a Serotype-Converting, Group E1 Salmonella enterica-Specific Bacteriophage". *Virology* 369, 234-244
16. Guichard\*, J.A., Middleton\*, P.C. and McConnell, M.R. (2013) Genetic analysis of structural proteins in the adsorption apparatus of bacteriophage epsilon 15. *World Journal of Virology* 12; 2(4): 152-159; doi:10.5501/wjv.v2.i4.152
17. Kropinski, Andrew M., Barry Walker, Anya D. Sydlaske, Kay Jacobs Navarette, and Michael R. McConnell. "Sequence of the Genome of the Temperate, Serotype-Converting Salmonella enterica Bacteriophage g341", ms in preparation
18. McConnell, M.R., M.D. Burns\*, T.P. Gary\*, B. Kat\*, D.A. DeRiemer\*, M. Quinn\*, L. E. Heasley\*, M.J. Rydelski\*, P. C. Middleton\*, B. Waters\*, W.W. Sanford\*, D.R. Hyatt\* and G.A. Fuller\*. "Intragenic suppression of a DNA ejection defect in bacteriophage E15", ms in preparation.
19. Berryman, Elizabeth M., Chasen J. Greig, Christina M. Metzler, Bernardo Hurtado, Katherine D. Schostag and Michael R. McConnell. "A Single Amino Acid Change in its Tail Spike Protein Enables Bacteriophage  $\epsilon$ 15 to Overcome both Structural and Immunological Barriers Presented by *Salmonella newington* (*Salmonella anatum* that has been lysogenized by E15)", ms in preparation
20. Victoria Chavez, Alex Earle, Yuendie Guridi, Brianna Jones, Courtney Rundio, Noah Schultz and Michael R. McConnell, "Characterization of P22virB-3: A bacteriophage that can infect four of the five major disease-causing Salmonella serogroups", ms in preparation

#### **E. PUBLISHED ABSTRACTS (asterisks denote PLNU undergraduate coauthors)**

1. McConnell, M., and A. Wright (1975). "Multiple steps in the absorption of bacteriophage E15 to its host cell, Salmonella anatum", Abstract, Phage Meetings, Cold Spring Harbor, N.Y.
2. Rossow, P.W., M.R. McConnell, and P.M. Blumberg (1977), "The subunit structure of LETS protein on the surface of chick embryo fibroblasts", Federation Proceedings 36:358, A472
3. McConnell, M.R., and J.E. Schoelz\* (1981), "Laboratory strains of Salmonella anatum that are sensitive to bacteriophages Felix 01 and E15". Ann. Meeting of the Amer. Soc. for Microbial. (Dallas, Texas), Abstract H99, p. 130
4. McAbee\*, D., M. McConnell, L. Heasley\*, D. Starn\*, D. Reel\*, and J. Schoelz\* (1981), "Bacteriophage E15 binds reversibly to its host cell, Salmonella anatum, at acidic pH". Fifth International Congress of Virology (Strasbourg, France) p.274, Abstract pp. 28/10
5. Burns\*, M.D., T.P. Gary\*, D.A. DeRiemer\*, and M.R. McConnell (1983). "Mutational suppression of a DNA ejection defect in bacteriophage E15", Abstract, Eighth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
6. Guthrie\*, J.E., R.A. Long\*, and M.R. McConnell (1983). "Transformation of Salmonella anatum A1 by plasmid pBR322 DNA", Abstract, Eighth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA

7. Jensen\*, R.A., N.D. Bravo\*, D.A. Brown\*, D.D. Brown, S.H. Gilkey\*, S.B. Oliver\* and M.R. McConnell (1983), "Isolation and preliminary characterization of a *Pseudomonas aeruginosa*-specific bacteriophage", Eighth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
8. Gary\*, T., M. Burns\*, B. Waters\*, L. Heasley\*, and M. McConnell (1984), "Intragenic suppression of a DNA ejection defect caused by a mutation in the tail gene of bacteriophage E15", Abstract, Ninth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
9. Birdwell\*, M., D. Pospisil\*, N. Kemalyan\*, B. Foster\*, and M. McConnell (1984), "Properties of a transformable strain of *Salmonella anatum*". Abstract, Ninth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
10. Steed\*, M., R. Jensen\*, K. Heaney\*, T. Lithgow\* and M. McConnell (1985), "Characterization of the cell surface receptor recognized by NB4, a *Pseudomonas aeruginosa*-specific bacteriophage", Abstract, Tenth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
11. Pospisil-Davis\*, D. and M. McConnell (1985), "Characterization of the restriction/modification phenotypes of Group E1 *Salmonellae* stains", Abstract, Tenth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
12. Gutierrez\*, H. and M. McConnell (1986), "Linear ordering of the fragments generated by digestion of the Bacteriophage E15 chromosome with restriction endonucleases Bam HI and Pst I", Abstract, Eleventh Annual West Coast Biological Sciences Undergraduate Research Conference, Occidental College, CA
13. Steed\*, M.M. and M.R. McConnell (1986), "Bacteriophage NB4 interacts with both cell surface proteins and carbohydrate antigens during adsorption to *Pseudomonas aeruginosa*", Abstract, Eleventh Annual West Coast Biological Sciences Undergraduate Research Conference, Occidental College, CA
14. McConnell, M.R., M.D. Burns\*, D.A. DeRiemer\*, T.P. Gary\*, L.E. Heasley\* and B. Kat\* (1986), "The role of the tail protein in the DNA ejection mechanism of bacteriophage E15", Abstract, Tenth Biennial Meeting on Bacteriophage Assembly, MacDonald College of McGill University, Montreal, Quebec
15. McConnell, M.R., D.P. Davis\* and H.G. Gutierrez\* (1986), "Cloning of the cell surface conversion genes of bacteriophage E15 - A preliminary report", Abstract, Tenth Biennial Meeting on Bacteriophage Assembly, MacDonald College of McGill University, Montreal, Quebec
16. Middleton\*, P.C., M.J. Rydelski\* and M.R. McConnell (1987), "Characterization of the cell surface conversion genes of E15, a *Salmonella*-specific bacteriophage", Abstract, Twelfth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA
17. McConnell, M.R., P.C. Middleton\*, M.J. Rydelski\*, H.G. Gutierrez\* J.D. Owens\*, S.L. Risley\* and W.W. Sanford\* (1987), "Screening of cloned E15 DNA fragments for the genes that govern cell surface conversion upon infection of *Salmonella anatum*, A126, **1987 Meeting on Molecular Genetics of Bacteria and Phage**, Cold Spring Harbor laboratory, N.Y.
18. Owens\*, J.D., P.C. Middleton\*, W.W. Sanford\*, G.A. Fuller\* and M.R. McConnell (1988) "Identification of the chromosomal location of the cell surface conversion genes of E15, a *Salmonella anatum*-specific bacteriophage" Abstract, Thirteenth Annual West Coast Biological Sciences Undergraduate Research Conference, Occidental College, CA
19. McConnell, M.R. and P.C. Middleton\* (1988), "Characterization of the DNA Ejection Mechanism of Bacteriophage E15: Evidence Implicating the 109,000, the 93,000, and the 85,000 Dalton Virion

Polypeptides as Components of the E15 DNA Ejection Apparatus". Eleventh Biennial Meeting on Bacteriophage Assembly Asilomar, CA

20. Walker\*, B., J. Chase\*, J. Fuller\*, W. Sanford\* and M. McConnell (1989), "Chromosomal Endonuclease Restriction Mapping and DNA Packaging Mechanism for the Salmonella anatum-specific Bacteriophage, E15" **Abstract, Fourteenth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA**

21. McConnell, M.R., B. Walker\*, P. Middleton\*, J. Chase\*, J. Fuller\* and D. Hyatt\* (1989), "Organizational and Functional Aspects of the Genome of the Salmonella Bacteriophage E15, as Revealed by Restriction Endonuclease Mapping and Marker Rescue Assays", Abstract, **1989 Annual Meeting on the Molecular Genetics of Bacteria and Phages, Cold Spring Harbor Laboratory, NY**

22. McConnell, M.R., W. Sanford\* and P. Middleton\* (1990), "Cloning the Lipopolysaccharide Conversion Genes of Bacteriophage E15 - A Preliminary Report", Abstract I-P-6, **First Annual Congress of the International Endotoxin Society, San Diego, CA (May, 1990)**

23. McConnell, M.R., D. Falk, M. Williams\*, B. Walker\*, D. Hambright\*, J. Chase\*, D. Hyatt\*, P. Middleton\*, M. Barry, Jr.\* and S. Sage\*, "The Lipopolysaccharide Conversion Genes are Adjacent to the Integration Site in the Genome of the Temperate Salmonella Phage E15", Abstract A-138, **1990 Annual Meeting on the Molecular Genetics of bacteria and Phages Cold Spring Harbor Laboratory, N. Y.**

24. Marvin\*, M. and M.R. McConnell (1991), "Use of Transposon Tn5SupF as a tool for locating the conversion Genes in the Genome of Bacteriophage E15 - A preliminary report, Abstract, Sixteenth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA

25. Sage\*, S., M. Barry, Jr.\* , M. Williams\*, M. Marvin\* and M.R. McConnell (1991), "Evidence for Close Proximity of Lipopolysaccharide conversion Genes and the Integration Site in the Genome of the Temperate Salmonella Bacteriophage E15, Abstract, Sixteenth Annual West Coast Biological Sciences Undergraduate Research Conference, University of Santa Clara, CA

26. McConnell, M.R., D. Falk, M. Williams\*, M. Marvin\*, M. Barry, Jr.\* and S. Sage\* (1991), "Alternative approaches to mapping the Lipopolysaccharide conversion genes in the genome of the temperate Salmonella bacteriophage, E15", Abstract, Twelfth International Bacteriophage Assembly Meeting, Cable, WI (June, 1991)

27. Barry, Jr.\* M, and M. McConnell (1992), "Development of a transposon system suitable for mapping the cell surface conversion genes of Salmonella bacteriophage, E15, by insertion mutagenesis", Abstract, Seventeenth Annual West Coast Biological Sciences Undergraduate Research Conference, Point Loma Nazarene College, San Diego, CA

28. Kerns\*, S., A. Miller\* and M. McConnell (1994), "Cloning of the transacetylase repressor gene of Epsilon 15, a Group E1 Salmonellae-converting bacteriophage...a progress report", Abstract, Nineteenth Annual West Coast Biological Sciences Undergraduate Research Conference, Occidental College, Los Angeles, CA

29. McConnell, M.R., B. Butts\*, F. Conte\*, D. Brock\* and V. Tran\* (1995) "Initial characterization of genes from the Group E1 Salmonellae-specific, lipopolysaccharide converting phages, Epsilon 15 and c341, the protein products of which are believed to inhibit production of host cell O-polysaccharide transacetylase enzyme, Abstract 164, 49<sup>th</sup> Annual Meeting on Molecular Genetics of Bacteria and Phages, Cold Spring Harbor Laboratory, NY



30. Butts\*, Brent, and Michael McConnell (1995) "Initial characterization of the transacetylase repressor genes of the Group E1 Salmonellae-converting phages, Epsilon 15 and c341", Abstract, Twentieth Annual West Coast Biological Sciences Undergraduate Research Conference, University of San Francisco, CA
31. Brock\*, David, Vitruc Tran\* and M. McConnell (1996), "A cloned copy of the Epsilon 15 transacetylase repressor gene alters the in vitro phage receptor activity of Group E1 Salmonellae lipopolysaccharide", Abstract, Twenty-First Annual West Coast Biological Sciences Undergraduate Research Conference, Point Loma Nazarene College, San Diego, CA
32. Butts\*, Brent, and M. McConnell (1996), "Detection of the beta polymerase gene of bacteriophage Epsilon 15 by PCR, using primers based upon the O-polysaccharide alpha polymerase gene sequence of Salmonella anatum", Abstract, Twenty-First Annual West Coast Biological Sciences Undergraduate Research Conference, Point Loma Nazarene College, San Diego, CA
33. Eastis\*, J., B. Whitehead\* and M. McConnell (1997), "Probable primary structure of the transacetylase repressor protein of bacteriophage Epsilon 15", Abstract, Twenty-Second Annual West Coast Biological Sciences Undergraduate Research Conference, Loyola Marymount University, Los Angeles, CA
34. McConnell, Michael (1997), "Characterization of a gene in bacteriophage Epsilon 15 whose expression blocks acetylation of Salmonella O-polysaccharide", First Annual Meeting of the San Diego Microbiology Group (May 17, 1997)
35. McConnell, M., B. Butts\*, K.A. Johnson\*, B. Whitehead\*, J. Eastis\*, D. Mills\*, S. Norton\*, F. Conte\*, D. Brock\* and V. Tran\* (1997), "Control of acetylation of Group E1 Salmonellae endotoxin by bacteriophages", Annual Meeting on Microbial Pathogenesis and Host Response, Cold Spring Harbor Laboratory, NY
36. Norton\*, Suzanne, Kenneth Day\* and Michael McConnell (1998), "A new model for the mechanism of inhibition of O-polysaccharide transacetylase by bacteriophage Epsilon 15", Abstract, Twenty-third Annual West Coast Biological Sciences Undergraduate Research Conference, University of San Francisco, CA
37. Day\*, Kenneth, Suzanne Norton\* and Michael McConnell (1999) "Establishment of the correct ORF for the bacteriophage Epsilon 15 transacetylase repressor gene by in vitro mutagenesis, using altered PCR primers", Abstract, Twenty-Fourth Annual West Coast Biological Sciences Undergraduate Research Conference, University of California at Irvine
38. Mills\*, David, Michael McConnell and Stephen Billington (1999) "A "Genomics" approach to the search for beta polymerase, a hypothesized cell surface conversion gene of bacteriophage Epsilon 15", Abstract, Twenty-Fourth Annual West Coast Biological Sciences Undergraduate Research Conference, University of California at Irvine
39. Patrick\*, Aaron, Kenneth Oakes\* and Michael McConnell (2001) "Two functional O-polysaccharide polymerase genes are present in the rfb gene cluster of Group E1 Salmonella enterica", Abstract, Twenty-sixth Annual West Coast Biological Sciences Undergraduate Research Conference, Santa Clara University.
40. Sydlaske\*, Anya and Michael McConnell (2002) "Identification of the gene coding for the tail fiber protein of the Salmonella-specific bacteriophage, Epsilon 15", Abstract, Twenty-seventh Annual West Coast Biological Sciences Undergraduate Research Conference, Loyola Marymount University
41. Hutson\*, Shandee M. and Michael McConnell (2003) "The use of chimer protein constructs to examine structure/function relationships in Group E1 Salmonella enterica O-polysaccharide polymerase enzymes" Abstract, Twenty-Eighth Annual West Coast Biological Sciences Undergraduate Research Conference, Colorado College, Colorado Springs.

42. Chen\*, Jessica, Courtney Hall\*, Natasha Jundt\*, Anthony Montano\*, Robert Thayer\* and Michael McConnell (2009). "Studies on the mechanism of lipopolysaccharide biosynthesis and its phage-mediated conversion in Group E1 Salmonellae bacteria", Presented by Courtney Hall and Anthony Montano at the "Celebration of Math and the Sciences at PC/PLNU", Point Loma Nazarene University, San Diego, CA, November 20, 2009.

43. Hall, Courtney\*, Anthony Montano\*, Natasha Jundt\*, Jessica Chen\*, Robert Thayer\* and Michael McConnell (2010) "Studies on the mechanism of lipopolysaccharide biosynthesis in Group E1 Salmonellae bacteria", Poster presentation by Courtney Hall and Anthony Montano at the Thirty-Fifth Annual West Coast Biological Sciences Undergraduate Research Conference, Santa Clara University, CA.

44. Megan Edgbert\*, Natasha Jundt\*, Anthony Montano\*, Andrew Montano\* and Michael McConnell (2011). "A gene deletion analysis of O-polysaccharide biosynthesis in *Salmonella enterica*, Serovar anatum, a serotype Group E1 organism", Seminar presentation by Megan Edgbert at the Thirty-Sixth Annual West Coast Biological Sciences Undergraduate Research Conference, Pacific Lutheran University, Tacoma, WA

45. Sean Heavey\*, Andrew Montano\*, Megan Evilsizor\*, Natasha Gebhart\*, Danielle Matonis\*, Hannah Quinn\*, Maika Adair\* and Michael McConnell (2013). "Identification of genes coding for two cell surface converting enzymes of the Group E1 Salmonella-specific bacteriophage, Epsilon 15", Seminar presentation by Sean Heavey at the Thirty-Eighth Annual West Coast Biological Sciences Undergraduate Research Conference, Point Loma Nazarene University, San Diego, CA (April 20, 2013). **Won 1<sup>st</sup> prize in the Molecular Biology Seminar Session**

46. Michael McConnell (2013). "Salmonella Cell Surface Conversion by Bacteriophage E15: An Old Story Revisited", Poster presented at the 50<sup>th</sup> Anniversary Symposium, Dept of Molecular Biology and Microbiology, Tufts University, Boston, MA (July 1, 2013)

47. Hannah Quinn\* and Michael McConnell (2014). "Evidence for Two O-Polysaccharide Polymerase Enzymes in *Salmonella enterica*, Serovar Strasbourg", Seminar presentation by Hannah Quinn at the 2014 UCSD Summer Undergraduate Research Conference, University of California San Diego, San Diego, CA (August 14, 2014).

48. Hannah Quinn\* and Michael McConnell (2014). "Evidence for Two O-Polysaccharide Polymerase Enzymes in *Salmonella enterica*, Serovar Strasbourg", Seminar presentation by Hannah Quinn at the 2014 Southern California Conferences for Undergraduate Research (SCCUR), November 22, 2014.

49. Amelia Krause\* and Michael McConnell (2017). "A Genetic Analysis of the Roles Played by Bacteriophage E15 Proteins gp21 and gp22 in Converting the O-Polysaccharide of *Salmonella anatum* from an Alpha-Glycosidically Linked Form to a Beta-Glycosidically Linked Form", Seminar presentation by Amelia Krause at the Forty-Second Annual West Coast Biological Sciences Undergraduate Research Conference, Santa Clara University (April 22, 2017).

50. Yuendie Guridi\*, Victoria Chavez\*, Courtney Rundio\*, Alexander Earle\* and Taylor Steele\* (Michael McConnell and Ryan Botts). "Characterization of a bacteriophage that can infect four of the five major disease-causing *Salmonella* serogroups", Seminar presentation by Yuendie Guridi, Victoria Chavez and Courtney Rundio at the 44<sup>th</sup> Annual West Coast Biological Sciences Undergraduate Research Conference, University of San Diego (April 6, 2019)

51. Victoria Chavez\*, Courtney Rundio\*, Brianna Jones\* and Noah Schultz\* (Michael McConnell), "Characterization of P22virB-3: A bacteriophage that can infect four of the five major disease-causing *Salmonella* serogroups", Seminar presentation by Victoria Chavez, Courtney Rundio, Brianna Jones and Noah Schultz at the U.C. San Diego Summer Research Conference (August 9, 2019).

## **INVITED RESEARCH SEMINARS AND PROFESSIONAL MEETING SEMINAR AND POSTER PRESENTATIONS**

- 1975** Cold Spring Harbor Phage Meetings, Cold Spring Harbor, New York
- 1984** Department of Biology, Biola University, La Mirada, CA
- 1984** Department of Microbiology and Immunology, University of Arizona, Tucson, AZ
- 1984** Basic Sciences Seminar, Loma Linda University, Loma Linda, CA
- 1985** Department of Molecular Biology, Vanderbilt University, Nashville, TN
- 1986** Tenth Biennial Meeting on Bacteriophage Assembly (two seminars), MacDonald College of McGill University, Montreal, Quebec
- 1988** 25th Anniversary Symposium of the Department of Molecular Biology and Microbiology, Tufts University School of Medicine, Boston, MA
- 1988** Eleventh Biennial Meeting on Bacteriophage Assembly, Asilomar, CA
- 1991** Twelfth International Meeting on Bacteriophage Assembly, Cable, WI
- 1992** Department of Microbiology, Montana State University, Bozeman, MT
- 1994** Department of Microbiology, University of Sydney, Sydney, Australia
- 1997** San Diego Microbiology Group – 2<sup>nd</sup> Annual Meeting (May 17, 1997)
- 1999** San Diego Microbiology Group – 4<sup>th</sup> Annual Meeting (May 22, 1999)
- 2001** Department of Medicine, U.C. San Diego, CA (July 5, 2001)
- 2005** Departments of Biology and Chemistry, Azusa Pacific University (April 21, 2005)
- 2005** San Diego Microbiology Group - 10<sup>th</sup> Annual Meeting, May 28, 2005
- 2011** San Diego Microbiology Group – 16<sup>th</sup> Annual Meeting, May 14, 2011
- 2011** Jack Johnson Lab Group (The Scripps Research Institute) – June 3, 2011
- 2012** Jack Johnson Lab Group (The Scripps Research Institute) – December, 2012
- 2013** 50<sup>th</sup> Anniversary Symposium of the Department Molecular Biology and Microbiology, Tufts University, Boston, MA (July 1, 2013)
- 2016** Centro Nacional de Biotecnologia, Madrid, Spain
- 2018** The Centre for Immunology and Infection, University of York, Heslington, York, United Kingdom

## **EDUCATIONAL WORKSHOPS AND OTHER PROFESSIONAL ACTIVITIES**

- 1986** “Gene cloning in the High School Classroom using inexpensive, homemade models”, Workshop for Secondary Science Teachers, Point Loma Nazarene College, (August, 1986)
- 1987** “Gene cloning in the classroom”, 3<sup>rd</sup> Annual Science Educator’s Conference K-12, San Diego County Office of Education (February 11, 1987)
- 1988** Adjudicator for 34<sup>th</sup> Annual Greater San Diego Science and Engineering Fair
- 1989** Adjudicator for 35<sup>th</sup> Annual Greater San Diego Science and Engineering Fair
- 1990** “DNA and the age of genetic engineering”, Seminar presentation for “Outward Bound” students, presented at U.C. San Diego (July 5, 1990)
- 1996** Scientific Consultant for Murdock Charitable Trust (Seattle, WA)
- 1996** Presentation on Microbes and Personal Hygiene, Warren Walker School, Grade K (March 19, 1996)
- 1997** Presentation on Anton van Leeuwenhoek and Microscopy, Warren Walker School, Grade 1 (May 13, 1997)
- 1997** “Immunoglobulin Genes - Structure and Function”, California Scope, Sequence and Coordination Southern Summer Institute (High School Science Teacher Workshop), Point Loma Nazarene College, (July 17, 1997)
- 1998 to present** Member, West Coast Biological Sciences Undergraduate Research Conference Steering Committee
- 1998** Presentation on Properties of RNA and Proteins, Warren Walker School, Grade 2 (May 22, 1998)
- 1998** Scientific Consultant for Murdock Charitable Trust (Seattle, WA)
- 1999** Presentation on Arthropods, Warren Walker School, Grade 3 (6/2/99)
- 2000** Presentation on Mammalian Circulatory and Excretory Systems, Warren Walker School, Grade 4 (May 31, 2000)
- 2001** Presentation on the Human Central Nervous System, Warren Walker School, Grade 5 (May 31, 2001)

## **ADDITIONAL COMMUNITY SERVICE ACTIVITIES**

**Sept. 1989** Vocal Music Entertainment (with Phil Bowles) for PLUS, a Point Loma Community Senior Citizens Group

**Feb. 1991** Vocal Music Entertainment (with Phil Bowles) for Active Adults, a Senior Citizens Group of the First United Methodist Church in San Diego

**Jan-March 1998** Coach for YMCA Basketball Program (Boys 7-8)

**1990-2002** Member, Linda Vista Civic Association

## **COLLEGE LEVEL COURSES TAUGHT**

Advanced Biochemistry 450 (1978 - 2013)

Basic Biology 101 (1978 - 1992)

Cell Biology and Biochemistry 110 (1992 -2005)

Cell Physiology (1975)

General Chemistry 154 - Qualitative Analysis (1978-1990)

General Zoology 102 (1978, 1991-92)

Genetics 341 (1975, 1978 - 1988)

General and Biological Chemistry 102 and 103, a two course sequence for allied health sciences

Immunology 387 (1986 - 1992)

Introductory Chemistry 101 (1978-1990)

Microbiology and Immunology 390 (1992- 2002)

Molecular Microbiology 356 (1978 - 1990)

Molecular Biology 380 (1991; 1997-2014)

Undergraduate Research 499 (1978 – present)

Virology 357 (1985-88)

## **FOREIGN TRAVEL EXPERIENCES**

|   |                 |
|---|-----------------|
| Western Europe (14 countries)           | (9 weeks) 1969  |
| France and Spain                        | (5 weeks) 1975  |
| Western Europe (5 countries)            | (5 weeks) 1976  |
| Spain                                   | (2 weeks) 1977  |
| England and Spain                       | (5 weeks) 1978  |
| Central Mexico                          | (2 weeks) 1979  |
| Central Mexico                          | (5 weeks) 1980  |
| Western Europe (5 countries) and Israel | (5 weeks) 1981  |
| Spain                                   | (2 weeks) 1986  |
| Spain and Portugal                      | (3 weeks) 1986  |
| Spain and Portugal                      | (2 weeks) 1987  |
| Central Mexico                          | (2 weeks) 1989  |
| Australia                               | (4 weeks) 1994  |
| Spain and Portugal                      | (3 weeks) 1994  |
| Central Mexico                          | (2 weeks) 1998  |
| British Columbia (Canada)               | (2 weeks) 2004  |
| England and Scotland.....               | (2 weeks) 2005  |
| British Columbia (Canada)               | (1 week) 2012   |
| Spain                                   | (4 weeks, 2016) |
| France and England                      | (4 weeks, 2018) |