

CURRICULUM VITAE

Walter W. Steiner

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Education

- 1998 **Ph.D.**, in Molecular, Cellular, and Developmental Biology. University of Colorado, Boulder.
Thesis: “Resolution of dimer chromosomes in *Escherichia coli*: analysis of recombination at the *dif* resolvase site.”
- 1997 **Certificate**, in Graduate Interdisciplinary Training Program in Biotechnology. University of Colorado, Boulder.
- 1991 **B.S.**, in Biological Sciences. University of California, Irvine.
Summa Cum Laude.

Professional Experience

- 2018-Present Professor, Department of Biology, Niagara University
- 2008-2018 Associate Professor, Department of Biology, Niagara University.
- 2004-2008 Assistant Professor, Department of Biology, Niagara University.
- 2003-2004 Staff Scientist, Fred Hutchinson Cancer Research Center, Division of Basic Sciences.
- 1998-2003 Postdoctoral fellow, Fred Hutchinson Cancer Research Center, Division of Basic Sciences. Advisor: Dr. Gerald R. Smith.
Research: Molecular and genetic analysis of meiotic recombination hotspots in *Schizosaccharomyces pombe*.
- 2004 Lecturer. Dept. of Biology, University of Washington, Seattle.
- 2002 Adjunct Professor of Microbiology. Olympic College—Bremerton, WA.
- 2001 Mentor for Summer Intern Program. Fred Hutchinson Cancer Research Center.

- 1995 Teaching Assistant. Cell Biology. University of Colorado, Boulder.
- 1994-1998 Graduate student mentor for undergraduate research projects. University of Colorado, Boulder.
- 1992-1998 Graduate Research Assistant. University of Colorado, Boulder; Department of Molecular, Cellular, and Developmental Biology. Advisor: Dr. Peter L. Kuempel. Research: Mechanisms of chromosome dimer formation and resolution in *Escherichia coli*.
- 1993 Biotechnology Training Program Industry Rotation. NeXstar Pharmaceuticals, Inc. Boulder, CO. Supervisor: Diane M. Tasset. Research: Isolation of single-stranded DNA ligands that bind to human thrombin protein.
- 1992 Research Assistant. University of California, Irvine. Department of Social Ecology. Supervisor: Dr. Betty Olson. Research: Wastewater remediation: cloning of polyphosphate kinase from *Acinetobacter* spp.
- 1990-1991 Undergraduate Research. University of California, Irvine. Department of Molecular Biology and Biochemistry. Advisor: Dr. Michael O'Connor. Research: Dorsal-Ventral Pattern Formation in *Drosophila melanogaster*.
- 1990 Research Assistant. University of California, Irvine. Department of Ecology and Evolutionary Biology. Supervisor: Dr. Stephen Weller. Research: The evolution of dioecy (separate sexes) in the Hawaiian plant genus *Schiedea*.
- 1990-1991 Tutor. University of California, Irvine. Tutored small groups of students for Molecular Biology, Biochemistry, and General Biology Classes.
- 1988 Tutor. Imperial Valley College. Tutored students in Math, Science, and English courses.

Grants, Honors, and Fellowships

- 2015-16 Niagara University Research Council mini-Grant.
- 2012-13 Niagara University Research Council mini-Grant.
- 2013 Niagara University Research Council Summer Stipend.
- 2011 Niagara University Research Council Summer Stipend.

- 2013-14 Niagara University Research Council Student Support Grant.
- 2011-2013 Niagara University Research Council Research Support Grant.
- 2007-2012 National Institutes of Health-AREA grant award.
- 2005-2007 Niagara University Research Council Summer Stipends.
- 2005-2007 Niagara University Research Council Research Support Grants.
- 2004-2007 Leukemia and Lymphoma Society Special Fellowship.
- 1999-2002 National Institutes of Health-National Research Service Award.
- 1996-1997 National Institutes of Health-Molecular, Cellular, and Developmental Biology Training Grant.
- 1992-1995 National Institutes of Health-Biotechnology Training Grant.
- 1988 Departmental Award for Outstanding Academic Accomplishment—Science, Math, and Engineering Division. Imperial Valley College.
- 1988 Departmental Award for Outstanding Academic Accomplishment—Social Science Division. Imperial Valley College.
- 1986 Harry Mah Scholarship. Imperial Valley College.
- 1986 Howard P. Meyer Scholarship—Science, Math, and Engineering Division. Imperial Valley College.
- 1986 Howard P. Meyer Scholarship—English Division. Imperial Valley College.

Publications

- Steiner, W.** 2022. Dynamic control of the meiotic recombination landscape. *Nat. Rev. Genet.* 23: 582-583. <https://doi.org/10.1038/s41576-022-00518-0>
- Mukiza, T.O., Protacio, R.U., Davidson, M.K., **Steiner, W.W.**, and Wahls, W.P. 2019. Diverse DNA sequence motifs activate meiotic recombination hotspots through a common chromatin remodeling pathway. *Genetics* **213**: 789-803.
- Foulis, S.J., **Steiner, W. W.** 2018. Sequence requirement of the *ade6-4095* meiotic recombination hotspot in *Schizosaccharomyces pombe*. *Genetica* **146**: 65-74.

- Steiner, W.W.**, Recor, C.L., and Zakrzewski, B.M. 2016. Unique properties of multiple tandem copies of the *M26* recombination hotspot in mitosis and meiosis in *Schizosaccharomyces pombe*. *Gene* **593**: 185-192.
- Steiner, W.W.** and Steiner, E.M. 2012. Fission yeast hotspot sequence motifs are also active in budding yeast. *PLoS One*, **7**: e53090. (Article selected for F1000Prime, indicating an article of special significance in its field.)
- Steiner, W.W.**, Davidow, P.A., and Bagshaw, A.T.M. 2011. Important characteristics of sequence-specific recombination hotspots. *Genetics* **187**: 385-396.
- Pinto, M.S. McGahan, M.E., **Steiner, W.W.**, and Prierer, R. 2011. The use of the pseudo-polyelectrolyte; poly(4-vinylphenol); in multilayered films as an antimicrobial surface coating. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* **377**: 182-186.
- Ingalsbe, M.I., St, Dennis, J.D, McGahan, M.E., **Steiner, W.W.**, and Prierer, R. 2009. Development of a novel expression, Z_{IMAX}/K_{ZI}, for determination of the counter-anion effect on the antimicrobial activity of tetrabutylammonium salts. *Bioorganic Med. Chem. Lett.* **19**: 4984-4987.
- Steiner, W.W.**, Steiner, E.M., Girvin, A.R., and Plewik, L.E. 2009. Novel nucleotide sequence motifs that create meiotic recombination hotspots. *Genetics* **182**: 459-469.
- Hirota, K., **Steiner, W.W.**, Shibata, T., and Ohta, K. 2007. Chromatin configuration at natural meiotic recombination hot spots in fission yeast. *Euk. Cell* **6**: 2072-2080.
- Steiner, W.W.** and Smith, G.R. 2005. Natural Meiotic Recombination Hotspots in the *S. pombe* Genome Successfully Predicted from the Simple Sequence Motif *M26*. *Mol. Cell Biol* **25**: 9054-9062.
- Steiner, W.W.** and Smith, G.R. 2005. Optimizing the Nucleotide Sequence of a Meiotic Recombination Hotspot in *Schizosaccharomyces pombe*. *Genetics* **169**: 1973-1983.
- Farah, J.A., Cromie, G., Davis, L., **Steiner, W.W.**, and Smith, G.R. 2005. Activation of an Alternative, Rec12-Independent Pathway of Meiotic Recombination in the Absence of Rad2 (FEN-1 Homolog). *Genetics* **171**: 1499-1511.
- Farah, J.A. Cromie, G, **Steiner, W.W.**, and Smith, G.R. 2005. A novel recombination pathway initiated by the MRN complex eliminates palindromes during meiosis in *Schizosaccharomyces pombe*. *Genetics* **169**: 1261-1274.
- Steiner, W.W.**, Schreckhise, R.W., and Smith, G.R. 2002. Meiotic DNA breaks at the *S. pombe* recombination hot spot *M26*. *Mol. Cell* **9**: 847-855.

Young, J.A., Schreckhise, R.W., **Steiner, W.W.**, and Smith, G.R. 2002. Meiotic recombination remote from prominent DNA breaks sites in *S. pombe*. *Mol. Cell* **9**: 253-263.

Steiner, W.W., Liu, G., Donachie, W.D, and Kuempel, P.L. 1999. The cytoplasmic domain of FtsK protein is required for resolution of chromosome dimers. *Mol. Microbiol.* **31**: 579-583.

Steiner, W.W. and Kuempel, P.L. 1998. Cell division is required for resolution of dimer chromosomes at the *dif* locus of *Escherichia coli*. *Mol. Microbiol.* **27**: 257-268.

Steiner, W.W. and Kuempel, P.L. 1998. Sister chromatid exchange frequencies in *Escherichia coli* analyzed by recombination at the *dif* resolvase site. *J. Bacteriol.* **180**: 6269-6275.

Tasset, D.M., Kubik, M.F., and **Steiner, W.W.** 1997. Oligonucleotide inhibitors of human thrombin that bind distinct epitopes. *J. Mol. Biol.* **272**: 688-698.

Presentations

2015 ECSC 70th Annual Conference – Western New England University. Poster Presentation. “Systematic mutagenesis of a meiotic recombination hotspot.” Steven Foulis and Walter Steiner.

2015 42nd annual Rochester Academy of Science Fall Scientific Paper Session. Poster Presentation. “Systematic mutagenesis of a meiotic recombination hotspot.” Steven Foulis and Walter Steiner.

2014 Yeast Genetics and Molecular Biology Meeting. University of Washing, Seattle. Poster Presentation. "Redefining the *M26* hotspot." Walter Steiner, Chelsea Recor, and Bethany Zakrzewski.

2014 ECSC 68th Annual Conference – Marist College, NY. Poster Presentation. "Redefining the *M26* hotspot." Chelsea Recor, Bethany Zakrzewski, and Walter Steiner.

2013 ECSC 67th Annual Conference – Providence College, RI. Poster Presentation. "A study of meiotic recombination hotspots in fission yeast." Chelsea Recor, Bethany Zakrzewski, and Walter Steiner.

2012 Yeast Genetics and Molecular Biology Meeting. Princeton University. Poster Presentation. "Conservation of recombination hotspot sequence motifs in the budding and fission yeasts." Walter Steiner and Estelle Steiner.

2010 ECSC 64th Annual Conference -- Pace University, Pleasantville, NY. Platform presentation. "Characterization of the CCAAT and oligo-C hotspots of meiotic recombination in the fission yeast" Peter Davidow and Walter Steiner.

- 2009 FASEB Summer Research Conference—Genetic Recombination and Chromosome Rearrangements. Snowmass, CO. Poster Presentation. "Novel nucleotide sequence motifs that produce hotspots of meiotic recombination." Walter Steiner, Estelle Steiner, Angela Girvin, and Lauren Plewik.
- 2009 ECSC 63rd Annual Conference – Wagner College, Staten Island, NY. Poster Presentations:
 "Identification of new recombination hotspot sequence motifs." Peter Davidow and Walter Steiner.
 "Characterization of the CCAAT recombination hotspot." Corey Kalinowski and Walter Steiner.
- 2008 Rochester Academy of Sciences, 35th Annual Fall Scientific Paper Session. Poster Presentation: "Characterization of a new sequence-dependent hotspot of meiotic recombination." Corey Kalinowski and Walter Steiner.
- 2008 ECSC 62nd Annual Conference – Niagara University, Lewiston, NY.
 Poster presentation: "Characterization of the CCAAT recombination hotspot in *Schizosaccharomyces pombe*." Michelle Ingalsbe and Walter Steiner.
- 2007 FASEB Summer Research Conference—Genetic Recombination and Chromosome Rearrangements. Snowmass, CO. Poster Presentation. "Identification of short nucleotide sequence motifs associated with hotspots of meiotic recombination." Angela Girvin, Estelle Steiner, and Walter Steiner.
- 2007 34th Annual Fall Scientific Paper Session of the Rochester Academy of Science. Geneseo, NY.
 Poster Presentation: "Multilayer Film Preparation of Poly(4-vinylphenol) from Aqueous Media for Studies as Antimicrobial Surface Coatings." Matthew S. Pinto, Vincent M. Carroll, Megan A. Baumler, John C. Cadwalader, Jeanette R. Drapo, Michelle L. Ingalsbe, Mallory A. van Dongen, Walter W. Steiner, Ronny Priefer.
 Poster Presentation: "Antibacterial Profile of Phenolic Salts" Janelle Ludwig, Walter W. Steiner, Ronny Priefer.
- 2007 8th annual Penn-York Undergraduate Student Research Conference. Houghton, NY.
 Poster Presentation: "Study of the Structure-Activity-Relationship (SAR) of Tetrabutylammonium Counter-Anions as Antimicrobial Agents and in Combination with Salts." Michelle L. Ingalsbe, Walter Steiner, Ronny Priefer.
- 2007 ECSC 61st Annual Conference – College of Mt. St. Vincent. Bronx, NY.
 Platform presentation: "Structure-activity-relationship profile of para-substituted phenols as anti-microbial agents." Jeffrey St. Denis, Walter Steiner, and Ronny Priefer.

Poster Presentation: "Structure-activity-relationship study of tetrabutylammonium counter-anions as antimicrobial agents." Michelle Ingalsbe, Walter Steiner, and Ronny Priefer.

Poster Presentation: "Evaluation of the antibacterial efficacy of mono-substituted aniline derivatives." John Cadwalader, Walter Steiner, and Ronny Priefer.

- 2007 233rd National Meeting and Exposition. Chicago, IL. Poster Presentation. "Structure Activity Relationship Study of Para-Substituted Phenol Derivatives, with Comparison of Minimum Inhibition Concentration and Zone of Inhibition." Jeffrey St. Denis, Walter Steiner, Ronny Priefer.
- 2006 Rochester Academy of Sciences, 33rd Annual Fall Scientific Paper Session. Poster presentation. "Antimicrobial structure activity relationship study of para-substituted phenol derivatives." Jeffrey St. Denis, Walter Steiner, Ronny Priefer.
- 2006 10th Annual Buffalo DNA Replication and Repair Symposium. Buffalo, NY. Poster Presentation. "Identification of short nucleotide sequence motifs associated with hotspots of meiotic recombination." Walter Steiner, Angela Girvin, and Estelle Steiner.
- 2006 ECSC 60th Annual Conference – St. Joseph's University, Philadelphia PA. Poster Presentation. "Identification of short nucleotide sequence motifs associated with hotspots of meiotic recombination." Angela Girvin and Walter Steiner. Prize winning poster: Outstanding Poster Presentation in Microbiology, Cell Biology, and Genetics.
- 2005 FASEB Summer Research Conference—Genetic Recombination and Chromosome Rearrangements. Snowmass, CO. Poster Presentation. "Natural hotspots of meiotic recombination in the *S. pombe* genome associated with a simple sequence motif, *M26*." Walter Steiner and Gerry Smith.
- 2001 FASEB Summer Research Conference—Genetic Recombination and Chromosome Rearrangements. Snowmass, CO. Poster Presentation. "The *M26* recombination hotspot is a site of meiosis-induced DNA double-strand breaks." W. Steiner, R. Schreckhise, and G. Smith.
- 1997 97th ASM General Meeting. Miami, FL. Poster Presentation "Density label assay for recombination at the *dif* resolvase site also detects changes in sister chromatid exchange." W. Steiner and P. Kuempel.
- 1995 Cold Spring Harbor—Molecular Genetics of Bacteria and Phage. Cold Spring Harbor, NY. Poster Presentation "Analysis of recombination at the *dif* locus." W. Steiner and P. Kuempel.

Department, College, and University Service

2020-present Policy and Procedures Review committee.

2020-present Contract Compliance Officer, ex officio, Senate Academic Policy Committee

2019-present NULTA At-Large delegate for contract compliance

2019-2021 Promotion and Tenure Committee, At-Large Alternate

2018 Promotion and Tenure committee (volunteered, not elected)

2017- 2019. Sabbatical Leave Committee

2016-present. Ad hoc reviewer for NU research council summer stipends.

2016-2017 Chair Middle States working group Standard III: Design and delivery of student learning experience.

2014-2017 Chair Academic Standard, Planning, and Support Services (ASPSS) Committee.

2014-present Academic Integrity board

2014-2016 Academic Senate (Senate Secretary)

2015 Updated biology webpage.

2013 Accepted student reception

2013-2016 Hearing committee (Regular and alternate member).

2013 Chair Biology Faculty search.

2013-2016 Scholarship interview day

2012-2014 Promotion and tenure committee

2008-2018 Niagara University open house volunteer

2010-2017 Conduct annual assessment of department student learning goals.

2009, 2011 Ad hoc reviewer for NU research council summer stipends.

2009-2011 Arts and Sciences – Curriculum committee

2009-2011 Academic Senate – Curriculum committee

- 2008 Niagara University student recruiter – Telephoned prospective students and provided tours of DePaul Hall and Niagara University.
- 2007-2009 Niagara University Research Council Member. 2nd year chair.
- 2007-2017 Chair, Niagara University Radiation Safety Committee.
- 2007-2009 Niagara University Academic Integrity Board – College of Arts and Sciences representative.
- 2007-2008 Strategic Planning Committee, College of Arts and Sciences, Niagara University.
- 2007 Honors thesis committee member (Michael Greene, Nate Tompkins)
- 2007 NULTA Benefits Negotiation Committee member.
- 2006 Revised Biology Student Learning goals and developed assessment plan.
- 2006 Honors thesis committee member (Amanda Benko, Scott Nodzo)
- 2005-2006 Biochemistry Faculty Search Committee
- 2005-2007 Niagara University Honors Council.
- 1995 Committee of Graduate Student Affairs. Graduate Student Representative. University of Colorado.

Professional Service and development

- 2022 International Student Science Fair judge.
- 2018 Enhancing the STEM pipeline through bioinformatics and genomics Conference
- 2015-present ECSC Travel Grant committee member.
- 2006-present Peer review of manuscripts for journals: BMC Genomics, BMC Systems Biology, Chromosoma, Chromosome Research, Current Genetics, Genes, Genetica, Genetics, Gene, Trends in Genetics, Chemistry Central Journal, Molecular and Cellular Biology, PLoS Genetics, FEBS Letters, Genome Research, Diabetes and Metabolic Syndrome.
- 2009-present Judge for ECSC paper, platform, and poster presentations.
- 2006-present Eastern Colleges Science Conference (ECSC) Board member.

- 2014 Ad hoc reviewer for NSF Career grant
- 2011-present Editorial Board of ScientificWorldJOURNAL
- 2011-2012 Editorial board member Omics publishing group – Cell and Developmental Biology
- 2008 Rochester Academy of Sciences, Platform Session Moderator.
- 2007-2008 Eastern Colleges Science Conference – Chair of organizing committee for 62nd annual ECSC at Niagara University.
- 1997 Graduate Student Symposium organizing committee—“Chromatin Structure and Gene Expression.” University of Colorado.

Community Service

- 2017 Science Fair judge. Science Teachers Association of New York State Science Congress (STANYS). University at Buffalo.
- 2009-Present Youngstown Volunteer Firefighter.
- 2008 Fundraiser for KickStart to aid the Casey House (a teen Safe house).

Professional Memberships

- 2019-present American Association for the Advancement of Science.
- 2004-present Member of Council on Undergraduate Research (CUR).
- 2005-2006 Member of the American Society for Microbiology.
- 1997-2005 Member of American Association for the Advancement of Science.
- 1998-2014 Member of Genetics Society of America. (Not continuous).

Students Trained (Honors Students underlined)

- 2021 Jordan Hiscock. Screen for trans acting factors required for activity of recombination hotspots in *Schizosaccharomyces pombe*

- 2020 Hannah Lutz. Screen for trans acting factors required for activity of recombination hotspots in *Schizosaccharomyces pombe*
- 2015-16 Stephen Foulis. Systematic mutagenesis of a meiotic recombination hotspots.
- 2014-15 Nicholas Magro, Nicholas Pesesky, Steven Foulis, Todd Gardner. Sequence requirements of meiotic recombination hotspots.
- 2012-13 Chelsea Recor. Molecular characterization of fission yeast plasmid recombinants.
- 2012-13 Bethany Zakrzewski. Sequence and genetic requirements of a plasmid-borne recombination hotspot.
- 2009 Sarah Roberts. Project: Molecular characterization of the CCAAT recombination hotspot.
- 2008-9 Corey Kalinowski. Project: Genetic analysis of the CCAAT recombination hotspot.
- 2008-9 Lauren Plewik. Project: Sub-screen and sequencing of multiple over-represented hotspot sequence motifs.
- 2008-9 Peter Davidow. Project: Characterization of the multi-C recombination hotspot.
- 2007-8 Michelle Ingalsbe. Project: Characterization of the CCAAT recombination hotspot.
- 2005-6 Angela Girvin. Honors Thesis: "Identification of Short Nucleotide Sequence Motifs Associated with Hotspots of Meiotic Recombination."