FREDERICK M. COHAN
Department of Biology, Wesleyan University
Middletown, CT 06459
Phone: (860) 685-3482
E-mail: FCohan@Wesleyan.edu
Web site: http://fcohan.faculty.wesleyan.edu/
LinkedIn: www.linkedin.com/pub/frederick-cohan/72/952/5a/
Google Scholar: http://scholar.google.com/citations?user=OH5OPd4AAAAJ
WesScholar (publication access): http://works.bepress.com/frederick_cohan/

EDUCATION

Harvard University, Ph.D., 1982, in Organismic and Evolutionary Biology. (Ph.D. Thesis Advisor: Richard C. Lewontin)

Stanford University, B.S., 1975, in Biology. (Honors Thesis Advisor: Marcus Feldman)

EMPLOYMENT

Interim Chair, Environmental Studies Program, Wesleyan University. 2020-present.

Huffington Foundation Chair in the College of the Environment, Wesleyan University. 2019-present.

Professor, Department of Biology, Wesleyan University. 1999-present.

Professor, College of the Environment, Wesleyan University. 2009-present.

NCAA Faculty Athletics Representative, Wesleyan University, 2017-present.

Chair, Department of Biology, Wesleyan University. 1999-2002, 2012-2013.

Associate Professor, Wesleyan University, Department of Biology. 1993-1999.

Director of Graduate Studies, Wesleyan University. 1998-1999.

Assistant Professor, Wesleyan University, Department of Biology. 1986-1993.

Adjunct Assistant Professor, University of Arizona, Department of Ecology and Evolutionary Biology. 1984-1986.

Postdoctoral, University of California at Davis, Department of Genetics. 1982-1984. (Research Advisor: Timothy Prout)

HONORS

Awarded Huffington Foundation Chair in the College of the Environment, July 2019.

Elected to Connecticut Academy of Science and Engineering. February 2017.

Phi Beta Kappa, Stanford University. June 1975.

Graduated with Distinction and Departmental Honors, Stanford University. June 1975.

GRANT AWARDS

John and Rosemarie Dooley Foundation. 2017-2021. “Origin of bacterial species in Death Valley.”

DOE Joint Genome Institute grant. “Species diversity: the fundamental basis for efficient energy capture in a model photosynthetic microbial community.” (PI: David M. Ward; Co-I’s: F. Cohan, D. Bryant, D. Rusch) (funding for sequencing at JGI; June 2009-May 2010).

NSF grant. "Do species matter in microbial communities?" (FIBR EF-0328698) (PI: David M. Ward; Co-I's: F. Cohan, A. Grossman, J. Heidelberg, D. Bhaya) ($5,000,000 in total costs, $393,114 to Wesleyan; September 2003-August 2011).

NASA grant. "Molecular and geochemical analysis of hot spring cyanobacterial and *Chloroflexus* mats as stromatolite analogs." (EXB02-0000-0095) (PI: David M. Ward; Co-I's: F. Cohan, J. Eisen, J. Heidelberg, M. Madigan, S. Schouten) ($588,000 in total costs, $49,795 to Wesleyan; April 2003-April 2007).

NSF grant. "Evolutionary adaptation in viruses: the role of recombination." (DEB-9815576) ($270,000 in total costs; May 1999-May 2003)

EPA grant. "Phage-mediated transfer of genes between bacterial species." (R82-5348-010) ($291,323 in direct costs; January 1997-January 2001)

EPA grant. "Effect of DNA Sequence Divergence on Gene Transfer between Bacterial Species." (R82-1388-010) ($232,631 in direct costs; September 1994-September 1998)

NIH Small Equipment Award. (GM50464; $19,469; June 1993-May 1994)

NIH grant. "Evolutionary Effects of Major Mutations." (GM39501; $341,430 in direct costs; August 1988-January 1994)

NIH Postdoctoral National Research Service Award. "Selection Responses to Ethanol Stress in Drosophila." (GM08511; August 1981-July 1983)

NIH Predoctoral National Research Service Award. (GM07620; 1978-1981)

PROFESSIONAL SOCIETIES

International Society for Microbial Ecology
American Society for Microbiology
American Association for the Advancement of Science
Sigma Xi

COURSES TAUGHT

Undergraduate:

Global Change and Infectious Disease (Biology 173/Environmental Studies 260)
Principles of Biology II (Biology 182)
Principles of Biology II: Advanced Topics (Biology 194)
Introduction to Biology (Biology 190)
Honors Principles of Biology II (Biology 196)
Principles of Biology II-Laboratory (Biology 192)
Principles of Biology II-Advanced Topics (Biology 194)
Physiology, Ecology, and Evolution (Biology 207)
Physiology, Ecology, and Evolution Laboratory (Biology 217)
Ecology (Biology 261)
Experimental Population Biology (Biology 262)
Microbes and Human-Caused Environmental Change (Biology 313)
Evolutionary and Ecological Bioinformatics (Biology and Computer Science 327)
Origins of Bacterial Diversity (Biology 337)
Evolution (Biology 349)

Microbial Population Biology (Biology 350)
Ecology and Evolution of HIV (Biology 375)
Gortner Minisymposium on Evolution (Biology 390)
Fundamentals of Ecology and Evolution (University of Arizona)
Genes and Adaptations (Harvard University)

Graduate:
Evolution of Infectious Disease Organisms (Biology 525)
Evolutionary and Ecological Bioinformatics (Biology and Computer Science 527)
Population Biology of Microbes (Biology 531)
Origins of Bacterial Diversity (Biology 537)
Molecular Evolution (Biology 555)
Advanced Research Seminars in Biology (Biology 557)

SUPERVISION OF STUDENT RESEARCH

Ph.D. Thesis research of Michael Roberts (Ph.D., 1993), Piotr Zawadzki (Ph.D., 1994), Thomas Palys (Ph.D., 1998), Jacek Majewski (Ph.D., 1999), Margaret Palmisano (Ph.D., 1999), Ionel Mitrica (Ph.D., 1999), Alexander Koeppel (Ph.D., 2009), Sarah Kopac (Ph.D., 2014), Fatai Olabemiwo, Katie Sagarin.

Master's Thesis research of Elizabeth Perry (M.A., 2007), Nora Connor (M.A., 2008), Jane Wiedenbeck (M.A., 2010), Stephanie Aracena (M.A., 2014), Taylor Forman (M.A., 2019), Nicole DelGaudio (M.A., 2019).

Honors Thesis research of Julien Farland (B.A., 1992), Patricia Russell (B.A., 1999), Jessica Sherry (B.A., 2013), Gregory Wong (B.A., 2015), Hannah Steinberg (B.A., 2016), Nicole DelGaudio (B.A., 2018).

Undergraduate research (supervised research of 130 undergraduates).

Sponsored summer research of undergraduate fellows (fellowships awarded by the Wesleyan's College of the Environment, Wesleyan's College of Integrative Sciences, Ford Foundation, Wesleyan's Hughes Program in the Life Sciences [sponsored by the Howard Hughes Medical Institute], the New England Consortium for Undergraduate Science Education [NECUSE], Connecticut Space Grant, and Wesleyan's McNair Program).

OTHER PROFESSIONAL ACTIVITIES

Handling Editor for *Infection, Genetics and Evolution* (2018-2019)
Academic Editorial Board of *PLoS ONE* (2014-2018)
Academic Editorial Board of PeerJ (2013-2017)
Academic Editorial Board of *Frontiers in Microbiology* (2013-present)
Member of NIH Special Emphasis Panel/Scientific Review Group 2020/08 ZGM1 TRN-8 (LP) to evaluate proposals for NIH Loan Repayment Programs. (April 2020)
Member of Advisory Board for the National Evolutionary Synthesis Center (2009 to 2012)
Member of NIH panel to review grants in Periodontal Genomics (November 2003)
Member of NIH panels to review grants in Genomes (February 2003, June 2003).

Member of EPA panels to review grants in Biology (January 1995, June 1998).
Member of NSF panels to review grants in Population Biology (October 1992, October 1996, April 1999).
Member of NSF panel to review Doctoral Dissertation Improvement Awards in population biology, systematics, and physiological ecology. (December, 1991).
Ad-hoc reviewer of NSF grants in Frontiers in Integrative Biological Research (FIBR); Population Biology; Systematics; Ecology; Biocomplexity; Biological Oceanography; Biodiversity Surveys and Inventories; Dimensions of Biodiversity; and Genome-Enabled Environmental Science.
Ad-hoc reviewer of grants for European Research Council.
Ad-hoc reviewer of grants for Agence Nationale de la Recherche, France.
Ad-hoc reviewer of grants for Netherlands Organisation for Scientific Research.
Ad-hoc reviewer of grants for Netherlands Roadmap for Large-Scale Research Facilities.
Ad-hoc reviewer of grants for Science Foundation Ireland.
Ad-hoc reviewer of grants for the Natural Environment Research Council, United Kingdom.
Ad-hoc reviewer of grants for the Biotechnology and Biological Sciences Research Council, United Kingdom.
Ad-hoc reviewer of grants for Wellcome Trust, United Kingdom.
Ad-hoc reviewer of grants for Marsden Fund of Royal Society of New Zealand.
Organized and chaired symposium of the Population Biologists of New England, Wesleyan University, April 1989.
Associate Editor, *Journal of Evolutionary Biology* (1996-1999).
Reviewer of articles (https://publons.com/author/1365090/frederick-cohan#profile) for *American Naturalist*, *Applied and Environmental Microbiology*, *Biochemical Genetics*, *Biodiversity and Conservation*, *Biology Direct*, *Biology Letters*, *BioScience*, *BMC Genomics*, *B'Or Ha'Torah—Journal of Science, Life and Art in the Light of the Torah*, *Canadian Journal of Microbiology, Cellular and Molecular Life Sciences*, *Current Biology, Current Opinion in Microbiology*, *Ecology Letters, EcoSal Plus, eLife, Environmental Microbiology, Evolution, Evolutionary Applications, Extremophiles, FEMS Microbiology Letters, Frontiers in Microbiology*, *Future Microbiology*, *Gene, Genetical Research*, *Genetics*, *Genome Biology and Evolution*, *Genome Research, Infection and Immunity*, *Infection Genetics and Epidemiology, International Journal of Systematic and Evolutionary Microbiology*, *International Society for Microbial Ecology (ISME) Journal*, *Journal of Bacteriology*, *Journal of Evolutionary Biology*, *Journal of Molecular Evolution*, *Journal of Theoretical Biology*, *Microbiology*, *Molecular Biology and Evolution*, *Molecular Ecology*, *Open Biology, Nature*, *Nature Microbiology*, *Nature Reviews Microbiology*, *Naturwissenschaften*, *PeerJ*, *Physiological Zoology*, *PLoS Biology*, *PLoS Genetics*, *PLoS ONE, PLoS Pathogens, Proceedings of the National Academy of Sciences*, *Proceedings of the Royal Society of London*, *Research in Microbiology*, *Science*, *Scientific Reports* (*Nature* Publishing Group), *Theoretical and Applied Genetics*, *Theoretical Population Biology*, *Trends in Ecology & Evolution*, *Trends in Microbiology*.

INVITED SYMPOSIUM TALKS

Cátedra Abierta Bernardo Jiménez Cano, Escuela de Microbiología, Universidad de Antioquia (Open Forum, School of Microbiology, University of Antioquia) on El Origin de la Vida (Origin of Life). "Origen de las especies bacterianas: De las grandes extinciones que ha sufrido la tierra y de cómo ellas han contribuido a la evolución de la vida" (Origin of bacterial species: The great extinctions the earth has suffered and how they have contributed to life's evolution). Medellín, Colombia. March 31, 2016.

Fundación Ramón Areces Scientific Symposium on Microbiology: Transmission. "The units of biodiversity and the units of transmission." Madrid, Spain. May 8, 2015.

22nd Latin American and 4th Colombian Congress of Microbiology. "El Origen de la Diversidad entre las Bacterias—El Ritmo, el Modo, y la Ecología de la Especiación," ("The Origin of Bacterial Diversity—The Tempo, Mode, and Ecology of Speciation"). Cartagena, Colombia. November 8, 2014.

International Symposium for Microbial Ecology. Seminar for symposium on the bacterial species definition in the era of 'omics'. "The tempo and mode of bacterial speciation: A tale of two phyla." Seoul, South Korea. August, 2014.

American Society for Microbiology Milestones in Microbiology—Herbert W. Conn. "What is missing in evolutionary theory, as seen by H. W. Conn and modern microbiologists." Storrs, Connecticut. October, 2013.

13th International Conference on Culture Collections (ICCC13). "Systematics and the origin of bacterial species." Beijing, China. September, 2013.

Bacterial Genetics and Ecology (BAGECO) conference. Keynote lecture: "Horizontal genetic transfer and the origin of ecological diversity in bacteria." Ljubljana, Slovenia. June, 2013.

Society for General Microbiology Autumn Conference 2012. Opening seminar for symposium on the concept of species. "Bacterial speciation concepts and the origins of ecological diversity in bacteria." Warwick, England. September, 2012.

International Symposium for Microbial Ecology. Seminar for symposium on mobility of genes and the species concept. "Horizontal transfer and the origin of species." Copenhagen. August, 2012.

XLVI Congreso Nacional de Ciencias Biológicas, Asociación Colombiana de Ciencias Biológicas. Plenary lecture on "Bacterial speciation"; another lecture on "Genomic heterogeneity and ecological speciation within *Bacillus subtilis*." Medellín**.** October, 2011.

Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases (MEEGID X). Plenary lecture on "A theory-based pragmatism for discovering and classifying newly divergent bacterial species." Amsterdam, Netherlands. November, 2010.

Darwin Symposium 2009—The Advancement of Evolutionary Thought, sponsored by the University of Chicago. "The Origins of Microbial Diversity." Chicago. October, 2009.

Genome Dynamics and Evolution, sponsored by the Norwegian Academy of Science and Letters. "Microbial Speciation." Oslo. May, 2009.

International Symposium for Microbial Ecology. “A dozen models of bacterial speciation.” Cairns, Australia. August, 2008.

Environmental Changes, Microbial Systems and Infections—The 12th Scientific Symposium of the Lilly Foundation. “How bacterial systematics might help to evaluate ecological and evolutionary trends imposed by environmental changes.” Madrid, Spain. November 16, 2007.

11th International Conference on Culture Collections, sponsored by the German Collection of Microorganisms and Cell Cultures. “Why there are bacterial ecotypes, how to discover them, and a proposal for naming them.” Goslar, Germany. October 10, 2007.

Gordon Research Conference on Microbial Population Biology. “The ecology of bacterial speciation.” Andover, New Hampshire. July, 2007.

New Horizons in Evolutionary Biology, sponsored by The Institute of Evolution, University of Haifa. “A new systematics for characterizing a community’s bacterial diversity.” Haifa, Israel. January 23, 2007.

What’s in a Species? Symposium sponsored by the Danish Microbiological Society. Keynote address: “Toward a conceptual and operational union of bacterial systematics, ecology, and evolution.” Copenhagen, Denmark. November 20, 2006.

International Symposia on Microbial Ecology. Title of talk: “A new systematics for characterizing a community’s bacterial diversity.” Vienna, Austria. August, 2006.

Discussion Meeting of the Royal Society of London, on Species and Speciation. Title of talk: “A new systematics for characterizing a community’s bacterial diversity.” London, England. March 13, 2006.

6th International Conference on *Legionella.* Title of talk: “A theory-based approach for identifying species of *Legionella*.” Chicago. October, 2005

American Society for Microbiology Colloquium on Interpreting Microbial Diversity. Title of talk: “A theory-based, practical approach for identifying bacterial species.” Atlanta, Georgia. June, 2005.

Symposium on The Prokaryotic Species: Genome Plasticity and Microevolution, sponsored by the University of Gent. Title of talk: “The ecotype concept in bacterial systematics.” Gent, Belgium. October, 2004.

Evolutionary Biology Program of the Canadian Institute for Advanced Research. Title of talk: “Speciation and biogeography of bacteria.” Montreal, Québec. October, 2004.

Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases VII. Plenary address on “Concepts of bacterial diversity and speciation.” Valencia, Spain. July, 2004.

Gordon Conference on Applied and Environmental Microbiology. Title of talk: “Sequence-based methods for discovering ecologically distinct and irreversibly separate populations of bacteria.” New London, Connecticut. July, 2003.

Gordon Conference on Microbial Population Biology. Title of talk: "Concepts of bacterial biodiversity for the age of genomics." Andover, New Hampshire. July, 2003.

Medieval Festival in New York: Rethinking the Middle Ages/Lire en Fete, sponsored by City University of New York's Graduate Center. Title of talk: "Epidemics in the late middle ages." New York City, October 25, 2002.

Symposium--From Sexual Selection to Sexual Isolation, at annual meeting of the American Society of Naturalists. Title of talk: "Barriers to genetic exchange in bacteria." Banff, Alberta, July 13, 2002.

Symposium on Definitions of Prokaryotic Species, at annual meeting of American Society for Microbiology. Title of talk: "How many ecologically distinct bacterial species are hidden within a named 'species'?" Salt Lake City, Utah, May 22, 2002.

Symposium on Microbial Population Biology, at meeting of Connecticut Valley Chapter of American Society for Microbiology. Title of talk: "What are bacterial species?" Groton, Conn., October 25, 2001.

Symposium on Patterns, Causes, and Consequences of Genetic Heterogeneity in Natural Microbial Populations, at annual meeting of the American Society for Microbiology. Title of Talk: "Ecological Diversity in Microbial Assemblages: Modeling Naturally Occurring Sequence Divergence and Population Structure." Orlando, Florida, May 22, 2001.

Symposium on Molecular Evolution of Human Pathogens and Infectious Diseases, meeting of the Society for Molecular Biology and Evolution. Title of talk: "Bacterial species and speciation." New Haven, Conn., June 20, 2000.

Society of Systematic Biologists. Symposium on Evolutionary Biology of Prokaryotes. Title of talk: "The origins of bacterial species." Madison, Wisconsin. June 24, 1999.

Festschrift for Richard C. Lewontin. Title of talk: "Evolution in a strangely sexual world: the origins of microbial species." Cambridge, Massachusetts. September 4, 1998.

Society for the Study of Evolution. Proutfest Symposium. Title of talk: "Genetic exchange and evolutionary divergence in bacteria, viruses, and plasmids." Boulder, Colorado. June 14, 1997.

2nd International Workshop on Molecular Epidemiology and Evolutionary Genetics of Pathogenic Microorganisms, sponsored by CDC. Title of talk: "Discovery and classification of ecological diversity in the bacterial world: The role of DNA sequence data." Montpellier, France. May 26, 1997.

International Conference on Systematic and Evolutionary Biology V. Session on experimental evolution. Title of talk: "Compensatory evolution in *Bacillus subtilis*." Budapest, Hungary. August 23, 1996.

Population Biologists of New England. Title of talk: "Genetic exchange and speciation in bacteria and their plasmids and viruses." Storrs, Connecticut. October 21, 1995.

Gordon Conference on Microbial Population Biology. Title of talk: "Genetic exchange and evolutionary divergence in bacteria, viruses, and plasmids." Plymouth, New Hampshire. July 18, 1995.

American Society for Microbiology. Session on quantitative approaches in ecological and environmental microbiology. Title of talk: "Genetic exchange and evolutionary divergence in prokaryotes." Washington, D.C. May 23, 1995.

INVITED WORKSHOP PARTICIPATION

Microbial Forensics Workshop. Defense Threat Reduction Agency. Title of talk: "The power and limitations of sequence-based analysis of microbial threat diversity." June 21, 2006.

Evaluating the Science Base for Microbial Forensics. National Research Council and Institute for Defense Analyses. June 22, 2004.

NASA Microbial Workshop. NASA Kennedy Space Center. February, 2004.

Workshop on Geothermal Biology and Geochemistry in Yellowstone National Park, sponsored by Thermal Biology Institute. Title of talk: "Discovery of ecologically distinct and irreversibly separate populations of bacteria, when everything isn't everywhere." Old Faithful, Wyoming. October, 2003.

Workshop on Microbial Evolution and Forensics, hosted by the US Army's Defense Threat Reduction Agency. Title of talk: "Sequence-based forensics for identifying bacterial agents used in bioterror." Columbia, Maryland. October 29, 2002.

Workshop on The Global Genome Question: Microbes as the Key to Understanding Evolution and Ecology, hosted by the American Academy of Microbiology. Longboat Key, Florida. October 11-13, 2002.

SCIENTIFIC PUBLICATIONS

Google Scholar site: http://scholar.google.com/citations?user=OH5OPd4AAAAJ
WesScholar site: http://works.bepress.com/frederick_cohan/

1. Cohan, F. M. 1984. Genetic divergence under uniform selection. I. Similarity among populations of *Drosophila melanogaster* in their responses to artificial selection for modifiers of ci^D. Evolution 38:55-71.
2. Cohan, F. M. 1984. Can uniform selection retard random genetic divergence between isolated conspecific populations? Evolution 38:495-504.
3. Oakeshott, J. G., F. M. Cohan, and J. B. Gibson. 1985. Ethanol tolerances of *Drosophila melanogaster* populations selected on different concentrations of ethanol supplemented media. Theoretical and Applied Genetics 69:603-608.
4. Cohan, F. M. and J. Graf. 1985. Latitudinal cline in *Drosophila melanogaster* for knockdown resistance to ethanol fumes and for rates of response to selection for further resistance. Evolution 39:278-293.
5. Cohan, F. M. and A. A. Hoffmann. 1986. Genetic divergence under uniform selection. II. Different responses to selection for knockdown resistance to ethanol among *Drosophila melanogaster* populations and their replicate lines. Genetics 114:145-163.
6. Hoffmann, A. A. and F. M. Cohan. 1987. Olfactory responses of flies selected for knockdown resistance to ethanol. Behavior Genetics 17:307-312.
7. Hoffmann, A. A. and F. M. Cohan. 1987. Genetic divergence under uniform selection. III. Selection for knockdown resistance to ethanol among *Drosophila pseudoobscura* populations and their replicate lines. Heredity 58:425-433.

8. Cohan, F. M. and A. A. Hoffmann. 1989. Uniform selection as a diversifying force in evolution: evidence from *Drosophila*. American Naturalist 134:613-637.
9. Cohan, F. M., A. A. Hoffmann, and T. W. Gayley. 1989. A test of the role of epistasis in divergence under uniform selection. Evolution 43:766-774.
10. Cohan, F. M., M. S. Roberts, and E. C. King. 1991. The potential for genetic exchange by transformation within a natural population of *Bacillus subtilis*. Evolution 45:1393-1421.
11. Roberts, M. S. and F. M. Cohan. 1993. The effect of DNA sequence divergence on sexual isolation in Bacillus. Genetics 134:401-408.
12. Cohan, F. M. 1994. The effects of rare but promiscuous genetic exchange on evolutionary divergence in prokaryotes. American Naturalist 143:965-986.
13. Roberts, M. S., L. K. Nakamura, and F. M. Cohan. 1994. *Bacillus mojavensis* sp. nov., distinguishable from *Bacillus subtilis* by sexual isolation, divergence in DNA sequence, and differences in fatty acid composition. International Journal of Systematic Bacteriology 44:256-264.
14. Cohan, F. M., E. C. King, and P. Zawadzki. 1994. Amelioration of the deleterious pleiotropic effects of an adaptive mutation in *Bacillus subtilis*. Evolution 48:81-95.
15. Cohan, F. M. 1994. Genetic exchange and evolutionary divergence in prokaryotes. Trends in Ecology & Evolution 9:175-180.
16. Cohan, F. M. 1995. Does recombination constrain neutral divergence among bacterial taxa? Evolution 49:164-175.
17. Zawadzki, P., M. S. Roberts, and F. M. Cohan. 1995. The log-linear relationship between sexual isolation and sequence divergence in Bacillus transformation is robust. Genetics 140:917-932.
18. Roberts, M. S. and F. M. Cohan. 1995. Recombination and migration rates in natural populations of *Bacillus subtilis* and *Bacillus mojavensis*. Evolution 49:1081-1094.
19. Zawadzki, P. and F. M. Cohan. 1995. The size and continuity of DNA segments integrated in Bacillus transformation. Genetics 141:1231-1243.
20. Zawadzki, P., M. A. Riley, and F. M. Cohan. 1996. Homology among nearly all plasmids infecting three *Bacillus* species. Journal of Bacteriology 178:191-198.
21. Roberts, M. S., L. K. Nakamura, and F. M. Cohan. 1996. *Bacillus vallismortis* sp. nov., a close relative of *Bacillus subtilis*, isolated from soil in Death Valley, California. International Journal of Systematic Bacteriology 46:470-475.
22. Cohan, F. M. 1996. The role of genetic exchange in bacterial evolution. American Society for Microbiology News 62:631-636.
23. Palys, T., L. K. Nakamura, and F. M. Cohan. 1997. Discovery and classification of ecological diversity in the bacterial world: the role of DNA sequence data. International Journal of Systematic Bacteriology 47:1145-1156.
24. Majewski, J. and F. M. Cohan. 1998. The effect of mismatch repair and heteroduplex formation on sexual isolation in Bacillus. Genetics 148:13-18.
25. Nakamura, L. K., M. S. Roberts, and F. M. Cohan. 1999. Relationship between the *Bacillus subtilis* clades associated with strains 168 and W23: a proposal for *B.*

subtilis subsp. *subtilis* and *B. subtilis* subsp. *spizizenii*. International Journal of Systematic Bacteriology 49:1211-1215.
26. Majewski, J. and F. M. Cohan. 1999. Adapt globally, act locally: The effect of selective sweeps on bacterial sequence diversity. Genetics 152:1459-1474.
27. Majewski, J. and F. M. Cohan. 1999. DNA sequence similarity requirements for interspecific recombination in Bacillus. Genetics 153:1525-1533.
28. Cohan, F. M. 1999. Genetic structure of bacterial populations. In: *Evolutionary Genetics from Molecules to Morphology*, (R. Singh and C. Krimbas, eds.), pp. 475-489, Cambridge University Press.
29. Majewski, J., P. Zawadzki, P. Pickerill, F. M. Cohan, and C. W. Dowson. 2000. Barriers to genetic exchange between bacterial species: *Streptococcus pneumoniae* transformation. Journal of Bacteriology 182:1016-1023.
30. Palys, T., E. Berger, I. Mitrica, L. K. Nakamura, and F. M. Cohan. 2000. Protein-coding genes as molecular markers for ecologically distinct populations: the case of two *Bacillus* species. International Journal of Systematic and Evolutionary Microbiology 50:1021-1028.
31. Palmisano, M. M., L. K. Nakamura, K. E. Duncan, C. A. Istock, and F. M. Cohan. 2001. *Bacillus sonorensis* sp. nov., a close relative of *Bacillus licheniformis*, isolated from soil in the Sonoran Desert, Arizona. International Journal of Systematic and Evolutionary Microbiology 51: 1671-1679.
32. Cohan, F. M. 2001. Bacterial species and speciation. Systematic Biology 50:513-524.
33. Cohan, F. M. 2002. Clonal structure: an overview. In: *Encyclopedia of Evolution*, (M. Pagel, editor in chief), Oxford University Press, pp. 159-161.
34. Cohan, F. M. 2002. Clonal structure: population structure and clonality of bacteria. In: *Encyclopedia of Evolution*, (M. Pagel, editor in chief), Oxford University Press, pp. 161-163.
35. Cohan, F. M. 2002. What are bacterial species? Annual Review of Microbiology 56:457-487.
36. Cohan, F. M. 2002. Sexual isolation and speciation in bacteria. Genetica 116:359-370.
37. Feldgarden, M., N. Byrd, and F. M. Cohan. 2003. Gradual evolution in bacteria: Evidence from *Bacillus* systematics. Microbiology 149: 3565-3573.
38. Cohan, F. M. 2004. Concepts of bacterial biodiversity for the age of genomics. In: *Microbial Genomes*, (C. M. Fraser, T. Read, and K. E. Nelson, editors), Humana Press, pp. 175-194.
39. Cohan, F. M. 2005. Periodic selection and ecological diversity in bacteria. In: *Selective Sweep*, (D. Nurminsky, editor), Landes Bioscience, Austin pp. 78-93.
40. Ward, D. M. and F. M. Cohan. 2005. Microbial diversity in hot spring cyanobacterial mats: pattern and prediction. In *Geothermal Biology and Geochemistry in Yellowstone National Park* (W. P. Inskeep and T. McDermott, eds.). Montana State University Thermal Biology Institute, Bozeman, pp. 185-201.
41. Godreuil, S., F. Cohan, H. Shah, and M. Tibayrenc. 2005. Which species concept for bacteria?—An E-debate. Infection, Genetics and Evolution 5:375-387.

42. Gevers, D., F. Cohan, F., J. Lawrence, B. G. Spratt, T. Coenye, E. J. Feil, E. Stackebrandt, Y. Van de Peer, P. Vandamme, F. L. Thompson, and J. Swings. 2005. Re-evaluating prokaryotic species. Nature Reviews Microbiology 3:733-739.
43. Cohan, F. M., A. Koeppel, and D. Krizanc. 2006. Sequence-based discovery of ecological diversity within *Legionella*. In Legionella*: State of the Art 30 Years after Its Recognition.* (N. P. Cianciotto, Y. Abu Kwaik, P. H. Edelstein, B. S. Fields, D. F. Geary, T. G. Harrison, C. A. Joseph, R. M. Ratcliff, J. E. Stout, and M. S. Swanson, eds.). American Society for Microbiology, Washington, D.C., pp. 367-376.
44. Cohan, F. M. 2006. Toward a conceptual and operational union of bacterial systematics, ecology, and evolution. Proceedings of the Royal Society of London Series B 361:1985-1996.
45. Ward, D. M., M. M. Bateson, M. J. Ferris, M. Kühl, A. Wieland, A. Koeppel, and F. M. Cohan. 2006. Cyanobacterial ecotypes in the microbial mat community of Mushroom Spring (Yellowstone National Park, Wyoming) as species-like units linking microbial community composition, structure and function. Proceedings of the Royal Society of London Series B 361: 1997-2008.
46. Cohan, F. M. and E. B. Perry. 2007. A systematics for identifying the fundamental units of bacterial diversity. Current Biology 17:R373-R386.
47. Price, N. P. J., A. P. Rooney, J. L. Swezey, E. Perry, and F. M. Cohan. 2007. Mass spectroscopic analysis of lipopeptides from *Bacillus* strains isolated from diverse geographical locations. FEMS Microbiology Letters 271:83-89.
48. Cohan, F. M., D. Krizanc, and Y. Lu. 2007. Estimating bacterial diversity from environmental DNA: A maximum likelihood approach. International Symposium on Bioinformatics Research and Applications 2007:133-144.
49. Perry, E. B., A. Koeppel, D. Krizanc, A. P. Rooney, J. Sikorski, E. Nevo, and F. M. Cohan. 2006. Identifying the fundamental units of diversity among *Bacillus* isolates from 'Evolution Canyon' III. Israel Journal of Ecology and Evolution 52:543-552.
50. Bhaya, D., A. R. Grossman, A. Steunou, N. Khuri, F. M. Cohan, N. Hamamura, M. C. Melendrez, M. M. Bateson, D. M. Ward, and J. F. Heidelberg. 2007. Population level functional diversity in a microbial community revealed by comparative genomic and metagenomic analyses. ISME Journal 1:703-713.
51. Ward, D. M., F. M. Cohan, D. Bhaya, J. F. Heidelberg, M. Kühl, and A. Grossman. 2008. Genomics, environmental genomics and the issue of microbial species. Heredity 100:207-219.
52. Koeppel, A., E. B. Perry, J. Sikorski, D. Krizanc, W. A. Warner, D. M .Ward, A. P. Rooney, E. Brambilla, N. Connor, E. Nevo, R. M. Ratcliff, and F. M. Cohan. 2008. Identifying the fundamental units of bacterial diversity: A paradigm shift to incorporate ecology into bacterial systematics. Proc. Natl. Acad. Sci. USA 105:2504-2509. (recommended by Faculty of 1000 Biology)

53. Cohan, F. M. and A. F. Koeppel. 2008. The origins of ecological diversity in prokaryotes. Current Biology 18:R1024-R1034. (chosen as the issue's "Magazine Highlight").
54. Cohan, F. M. 2009. Tracking bacterial responses to global warming with an ecotype-based systematics. Clinical Microbiology and Infection 15(s1):54-59.
55. Connor, N., J. Sikorski, A. P. Rooney, S. Kopac, A. F. Koeppel, A. Burger, S. G. Cole, E. B. Perry, D. Krizanc, N. C. Field, M. Slaton, and F. M. Cohan. 2010. The ecology of speciation in *Bacillus*. Applied and Environmental Microbiology 76:1349-1358.
56. Cohan, F. M. 2010. Synthetic genome: Now that we're creators, what should we create? Current Biology 20:R675-R677.
57. Cohan, F. M. 2011. Are species cohesive?—A view from bacteriology. In: *Bacterial Population Genetics: A Tribute to Thomas S. Whittam*, (S. Walk and P. Feng, eds.), American Society for Microbiology Press, Washington, pp. 43-65.
58. Ward, D. M., C. G. Klatt, J. Wood, F. M. Cohan, and D. A. Bryant. 2011. Functional genomics in an ecological and evolutionary context: Maximizing the value of genomes in systems biology. In: *Functional Genomics and Evolution of Photosynthetic Systems*, (R. L. Burnap and W. Vermaas, eds.). Vol. 33, pp. 1-16. Springer, Dordrecht, The Netherlands.
59. Ward, D. M., Melendrez, M. C., Becraft, E. D., Klatt, C. G., Wood, J. & Cohan, F. M. 2011. Metagenomic approaches for the identification of microbial species. In *Handbook of Molecular Microbial Ecology, Volume I: Metagenomics and Complementary Approaches*, pp. 105-109. Edited by F. J. de Bruijn: Wiley-Blackwell.
60. Melendrez, M. C., R. K. Lange, F. M., Cohan, and D. M. Ward. 2011. Influence of molecular resolution on sequence-based discovery of ecological diversity among *Synechococcus* populations in an alkaline siliceous hot spring microbial mat. Applied and Environmental Microbiology 77:1359-1367.
61. Kopac, S. and F. M. Cohan. 2011. A theory-based pragmatism for discovering and classifying newly divergent bacterial species. In *Genetics and Evolution of Infectious Diseases*, ed. M. Tibayrenc, Elsevier, London, pp. 21-41.
62. Wiedenbeck, J. and F. M. Cohan. 2011. Origins of bacterial diversity through horizontal gene transfer and adaptation to new ecological niches. FEMS Microbiology Reviews 35:957–976.
63. Klatt, C. G., J. M. Wood, D. B. Rusch, M. M. Bateson, N. Hamamura, J. F. Heidelberg, A. R. Grossman, D. Bhaya, F. M. Cohan, M. Kühl, D. A. Bryant, and D. M. Ward. 2011. Community ecology of hot spring cyanobacterial mats: predominant populations and their functional potential. ISME Journal 5:1262-1278. (ISME Journal's Top Ten list).
64. Cohan, F.M. and S. M. Kopac. 2011. Microbial genomics: *E. coli* relatives out of doors and out of body. Current Biology 21:R587-589.
65. Becraft, E. D., F. M. Cohan, M. Kühl, S. Jensen, and D. M. Ward. 2011. Fine-scale distribution patterns of *Synechococcus* ecological diversity in the microbial mat of Mushroom Spring, Yellowstone National Park. Applied and Environmental Microbiology 77:7689-97.

66. Štefaniĉ, P., Decorosi, F., Viti, C., Petito, J., Cohan, F. M. & Mandić-Mulec, I. 2012. Quorum sensing diversity within and between ecotypes of *Bacillus subtilis*. Environmental Microbiology 14:1378-1389.
67. Francisco, J. C., D. Krizanc, and F. M. Cohan. 2012. Demarcation of bacterial ecotypes from DNA sequence data: A comparative analysis of four algorithms. 2nd IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) (doi: 10.1109/ICCABS.2012.6182633).
68. Kim, J.-S., M. Makama, J. Petito, N.-H. Park, F. M. Cohan, and R. S. Dungan. 2012. Diversity of Bacteria and Archaea in hypersaline sediment from Death Valley National Park, California. MicrobiologyOpen 1:135-148.
69. Das, S., L. M. Grady, J. Michtavy, Y. Zhou, F. M. Cohan, M. M. Hingorani, and D. B. Oliver. 2012. The variable sub-domain of *Escherichia coli* SecA functions to regulate SecA ATPase activity and ADP release. J. Bacteriology 194:2205-2213.
70. Kopac, S. and F. M. Cohan. 2012. Comment on "Population genomics of early events in the ecological differentiation of bacteria." Science (doi: http://comments.sciencemag.org/content/10.1126/science.1218198).
71. Cohan, F. M. and S. Aracena. 2012. Prokaryotic sex: Eukaryote-like qualities of recombination in an Archaean lineage. Current Biology 22:R601-R602.
72. Koeppel, A. F., J. O. Wertheim, L. Barone, N. Gentile, D. Krizanc, and F. M. Cohan. 2013. Speedy speciation in a bacterial microcosm: New species can arise as frequently as adaptations within a species. ISME Journal 7:1080-1091.
73. Cohan, F. M. 2013. Species. In *Encyclopedia of Genetics*. Edited by S. Maloy & K. Hughes. Oxford: Elsevier, p. 506-511. (http://www.sciencedirect.com/science/article/pii/B9780123749840014546).
74. Francisco, J. C., F. M. Cohan, and D. Krizanc. 2014. Accuracy and efficiency of algorithms for the demarcation of bacterial ecotypes from DNA sequence data. International Journal of Bioinformatics Research and Applications 10 (4/5):409-425.
75. Kopac, S., Z. Wang, J. Wiedenbeck, J. Sherry, M. Wu, and F. M. Cohan. 2014. Genomic heterogeneity and ecological speciation within one subspecies of *Bacillus subtilis.* Applied and Environmental Microbiology 80:4842-4853.
76. Cohan, F. M. and A. Boesel. 2014. Herbert W. Conn: Formative decades of microbiology and evolutionary biology. Microbe 9:406-409.
77. Becraft, E. D., J. M. Wood, D. B. Rusch, M. Kühl, S. I. Jensen, D. A. Bryant, D. W. Roberts, F. M. Cohan, and D. M. Ward. 2015. The molecular dimension of microbial species: 1. Ecological distinctions among, and homogeneity within, putative ecotypes of *Synechococcus* inhabiting the cyanobacterial mat of Mushroom Spring, Yellowstone National Park. Frontiers in Microbiology 6:590. (Also published as a chapter in *Systems Biology and Ecology of Microbial Mat Communities*, eds. M. G. Klotz, M. Kühl, J. F. Fredrickson, D. A. Bryant, W. P. Inskeep. 2017.)
78. Olsen, MT, S Nowack, JM Wood, ED Becraft, K LaButti, A Lipzen, J Martin, WS Schackwitz, DB Rusch, FM Cohan, DA Bryant, and DM Ward. 2015. The molecular dimension of microbial species: 3. Comparative genomics of *Synechococcus*

isolates with different light responses and *in situ* diel transcription patterns of associated putative ecotypes in the Mushroom Spring microbial mat. Frontiers in Microbiology 6:604. (Also published as a chapter in *Systems Biology and Ecology of Microbial Mat Communities*, eds. M. G. Klotz, M. Kühl, J. F. Fredrickson, D. A. Bryant, W. P. Inskeep. 2017.)

79. Cohan, FM 2016. Bacterial species concepts. In *Encyclopedia of Evolutionary Biology*, Volume 1. Edited by R. M. Kliman. Academic Press, Oxford, pp. 119-129.
80. Cohan, FM, Kopac, SM 2017. A theory-based pragmatism for discovering and classifying newly divergent species of bacterial pathogens, p 25-49. *In* Tibayrenc M (ed), Genetics and Evolution of Infectious Diseases, 2nd edition. Elsevier Inc., Oxford.
81. Melendrez, MC, Becraft E, Wood, JM, Olsen, MT, Bryant, DA, Heidelberg JF, Rusch, D, Cohan, FM, Ward, DM 2016. Recombination does not hinder formation or detection of ecological species of *Synechococcus* inhabiting a hot spring cyanobacterial mat. Frontiers in Microbiology 6:1540. (Also published as a chapter in *Development of Microbial Ecological Theory: Stability, Plasticity and Evolution of Microbial Ecosystems*, eds. S. Haruta, H. Futamata, Y. Saito. 2017. Frontiers Media.)
82. Cohan, FM 2016. Bacterial speciation: Genetic sweeps in bacterial species. Current Biology 26:R112-R115.
83. Dunlap CA, Saunders LP, Schisler DA, Leathers TD, Naeem N, Cohan FM, Rooney AP. 2016. *Bacillus nakamurai* sp. nov., a black-pigment-producing strain. Int J Syst Evol Microbiol 66:2987-2991.
84. Cohan, F. M. 2017. Species. In *Reference Module in Life Sciences*. Edited by B. Osmanaj and L. Escalante Santos. Elsevier. 10.1016/B978-0-12-809633-8.07184-3.
85. Dunlap CA, Schisler D, Perry E, Connor N, Cohan FM, Rooney A. 2017. *Bacillus swezeyi* sp. nov. and *Bacillus haynesii* sp. nov., isolated from Evolution Canyon III, Israel. International Journal of Systematic and Evolutionary Microbiology. DOI 10.1099/ijsem.0.002007.
86. Woodcock DJ, Krusche P, Strachan NJC, Forbes KJ, Cohan FM, Méric G, Sheppard SK. 2017. Genomic plasticity and rapid host switching promote the evolution of generalism in the zoonotic pathogen *Campylobacter*. Scientific Reports 7: 9650. DOI:10.1038/s41598-017-09483-9.
87. Cohan FM. 2017. Transmission in the Origins of Bacterial Diversity, From Ecotypes to Phyla. Microbiology Spectrum 5(5): MTBP-0014-2016. DOI 10.1128/microbiolspec.MTBP-0014-2016.
88. Cohan, F. M. 2019. Systematics: The cohesive nature of bacterial species taxa. Current Biology 29(5):R169-R172. doi: 10.1016/j.cub.2019.01.033.
89. Wood, JM, Becraft, ED, Krizanc D, Cohan FM, Ward DM. 2019. Ecotype Simulation 2: An improved algorithm for efficiently demarcating microbial species from large sequence datasets. BMC Bioinformatics (in review).

90. Becraft, E.D. , Wood, J.M. , Cohan, F.M., and Ward, D.M. (2020). Biogeography of American Northwest Hot Spring A/B'-Lineage *Synechococcus* Populations. Frontiers in microbiology *11*. doi.org/10.3389/fmicb.2020.00077
91. Kong, T., K. Mei, A. Wang, D. Krizanc, and F. M. Cohan. 2019. Delving below the species level to characterize the ecological diversity within the global virome: An exploration of West Nile Virus. Infection, Genetics and Evolution (in revision per journal reviews).
92. Cohan, F. M., M. Zandi, and P. E. Turner. 2020. Broadscale phage therapy is unlikely to select for widespread evolution of bacterial resistance to virus infection. Virus Evolution (in review).
93. Liang, Y., Xiao, X., Nuccio, E.E., Yuan, M., Zhang, N., Xue, K., Cohan, F.M., Zhou, J., and Sun, B. 2020. Differentiation strategies of soil rare and abundant microbial taxa in response to changing climatic regimes. Environmental Microbiology. doi:10.1111/1462-2920.14945
94. Cohan, F. M. 2020. Genomes Reveal the Cohesiveness of Bacterial Species Taxa And Provide a Path Toward Describing All of Bacterial Diversity. In: *Trends in bacterial and fungal systematics*", eds. P. Bridge, D. Smith, and E. Stackebrandt. CABI, Oxfordshire. (in press).
95. Cohan, F. M., E. Ouanemalay. 2020. The origin of species in bacteria and viruses. Current Biology (invited, in preparation).

BOOKS IN PREPARATION

1. Cohan, F. M. *Plagues of Our Success: How Human Domination of the Planet is Making Us Sick*.
2. Cohan, F. M. *The Origins of Bacterial Diversity*.

PUBLICATIONS FOR POPULAR AUDIENCES

1. Cohan, F. M. 2001. Nature, the mother of all bioterorists. *The Hartford Courant*, Op-Ed, Nov. 12. Also run by *The Record* on Nov. 16 and by *Newsday* on Nov. 18.
2. Cohan, F. M. 2011. Koufax's perfect game—the tale of the data. Also run as: A more perfect numbers game. *Los Angeles Times*, Op-Ed, Sept. 7.
3. Cohan, F. M. 2012. Science needs more *Moneyball*. American Scientist 100(3):182-185 (doi: 10.1511/2012.96.182).
4. Boesel, A., O. Goodman, H. Steinberg, and F. M. Cohan. 2014-2015. Invisible Life of Death Valley. (A twice-monthly report of Death Valley microbiology on Death Valley National Park's Facebook page).
5. Klimasmith, I., S. Zuniga-Levy, L. Lynch, O. Goodman, T. K. Kim, H. Steinberg, and F. M. Cohan. 2015-2017. Blog on microbial ecology and the politics of science, at cohanlab.research.wesleyan.edu, with feeders from Facebook (The Cohan Laboratory) and Twitter (@CohanLab).
6. Cohan, F., I Klimasmith. Op-Ed: As the world warms, deadly and disfiguring tropical diseases are inching their way toward the U.S. LA Times. November 30, 2018.

7. Cohan, F. M. 2019. How We Can All Share the Fight Against Infectious Disease. Arcadia Political Review. Spring 2019. http://www.wesleyanarcadia.com/spring-2019/how-we-can-all-share-the-fight-against-infectious-disease
8. Cohan, F. M., I. Klimasmith. Op-Ed: Another season, another lettuce recall. LA Times. November 27, 2019.
9. Cohan, F. M, K. Sagarin, and K. Mei. 2020. A clue to stopping coronavirus: Knowing how viruses adapt from animals to humans**.** The Conversation. February 4, 2020.

RESEARCH SOFTWARE

Cohan, F. M., D. Krizanc, A. Warner, J. Wood. 2007. Ecotype Simulation, a theory-based method to identify bacterial ecotypes from DNA sequence data. http://fcohan.web.wesleyan.edu/ecosim/

INTERVIEWS AND CONTRIBUTIONS TO NEWS

Interview with Rodrigo Pérez Ortega for Science on the Cuatro Ciénegas system. Science. June 30, 2020. "Pools in the Mexican desert are a window into Earth's early life." https://www.sciencemag.org/news/2020/06/pools-mexican-desert-are-window-earth-s-early-life

Interview with Melissa Healy for the Los Angeles Times. June 25, 2020. "How will the COVID-19 pandemic end?" https://www.latimes.com/science/story/2020-06-24/coronavirus-covid-19-pandemic-how-will-it-end?utm_source=sfmc_100035609&utm_medium=email&utm_campaign=26704+Today%27s+Headlines+6%2f25%2f2020&utm_term=https%3a%2f%2fwww.latimes.com%2fscience%2fstory%2f2020-06-24%2fcoronavirus-covid-19-pandemic-how-will-it-end&utm_id=8931&sfmc_id=471372

Interview with Hannah Docter-Loeb for the Argus. "Understanding COVID-19: An Interview with Professor Fred Cohan." March 27, 2020.

Letter to Wesleying quoted in Middletown Press. "Middletown City Hall, all Middlesex County schools closed due to coronavirus." Cassandra Day, March 14, 2020.

Interview with J. D. Allen from WSHU on Coronavirus. March 16, 2020. "It's A Novel Coronavirus, But To Find A Vaccine Scientists Look To The Past," with recorded interview. https://www.wshu.org/post/it-s-novel-coronavirus-find-vaccine-scientists-look-past#stream/0

Podcast for Counterpoint on Australian Broadcasting Corporation Radio National. February 24, 2020. https://www.abc.net.au/radionational/programs/counterpoint/24-02/11988042

Interview with *San Jose Mercury News* on Coronavirus. Article: Coronavirus: When Will It End? https://www.pressreader.com/usa/the-mercury-news/20200209/281496458283426 Lisa Krieger, February 9, 2020.

Interview for *Wesleyan Argus* Podcast on Coronavirus. February 4, 2020.

July 1, 2020