

CURRICULUM VITAE

Michael F. Cohen

Assistant Professor
Sonoma State University
Department of Biology, Darwin 222
1801 East Cotati Ave.
Rohnert Park, CA 94928

Tel. 707-664-3413
Email: cohenm@sonoma.edu

HIGHER EDUCATION

September 1990 to June 1996

Ph.D. Microbiology

University of California at Davis

August 1986 to May 1990

B.A. Biology, Microbiology option, Magna cum laude
California State University at Northridge

PROFESSIONAL EXPERIENCE

From Aug. 2005 **Assistant Professor of Biology**, Sonoma State University

Sept 2004 to present

Affiliate Assistant Professor University of Washington, College of Forest Resources, Box 352100, Seattle, WA 98195-2100

Aug 2002 to July 2005

Research Plant Pathologist (postdoctoral research); USDA-Agricultural Research Service, Tree Fruit Research Laboratory; Supervisor, Mark Mazzola.

Research on biologically-based integrated management systems for control of soilborne diseases of deciduous fruit trees.

Techniques: Pathogen root infection assays; Microbial identification by BIOLOG, FAME and DNA sequence analysis, PCR, measurement of nitric oxide in soils, cultures and cells, confocal microscopy.

Jan 2003 to March 2003

Biology Instructor; Wenatchee Valley College, Wenatchee, WA

Taught Biology of Cells lecture with laboratory as a single-semester sabbatical replacement.

April 1999 to July 2002

Post-doctoral Researcher; University of the Ryukyus; Supervisor, Dr. Hideo Yamasaki, Research on applied and basic aspects of *Azolla* water fern interactions with bacteria.

Techniques: Secondary metabolite purification, HPLC, GC, PCR, fluorimetry.

Aug. 1998 to July 2001

Lecturer in Biology; University of Maryland, Asian Division.

Taught Concepts in Biology, Introductory Microbiology, Human Biology, and Human Genetics.

Nov. 1997 to Aug. 1998

Health Science Specialist (Postdoctoral Researcher); VA Medical Center; Laboratory of Cardiovascular Molecular Biology, Sepulveda, CA.

Characterization and cloning of mammalian folate and pantothenic acid transporters.

Responsibilities involved organizing and hiring staff for a new laboratory.

Techniques: Cell culture, PCR cloning, [³H]-folate uptake assays, transformation of vascular smooth muscle cells.

Sept. 1996 to Oct. 1997

General Science & Medical Microbiology Instructor; United States Peace Corps; United States Peace Corps/Nepal, G.P.O. 613, Kathmandu, Nepal.

Taught microbiology at a community health vocational school and elementary school science courses; assisted in tree planting and toilet building projects.

Aug. 1995 to May 1996

Full-time Professor of Biology (one-year emergency hire); California State University, Fresno.

Taught Microbiology and Bacterial Physiology courses with associated laboratories while continuing Ph.D. dissertation work. Coordinated service-learning microbiology projects sponsored by governmental and non-governmental organizations.

Sept. 1990 to June 1995

Graduate Researcher and Part-time Instructor; University of California, Davis; Section of Microbiology, Supervisor, Dr. Jack Meeks

Characterized a symbiotic interaction between the N₂-fixing cyanobacterium *Nostoc punctiforme* and a bryophyte plant host. Taught biology discussion sections and various microbiology laboratories.

Techniques: Southern & Northern blotting, DNA cloning, electroporation, interspecific conjugation, transposon mutagenesis, gene disruption, luciferase assays, [³⁵S]-Methionine incorporation assays, acetylene reduction assays.

Fellowships and Awards

- USDA Performance Bonus Award, \$1,500 (2003)
- Japan Society for the Promotion of Science Fellowship, \$100,000 (Nov. 2000 to July 2002)
- Schwall Medical Research Fellowship, \$50,000 (Sept. 1990 to July 1995)

Funded Grant Proposals at SSU

Cohen MF, "Plant Byproduct Utilization by Microbial Cultures: Strategies for bolstering the economic feasibility of various biotechnological applications," SSU Research, Scholarship and Creative Activity Program. Funding provided for undergraduate student research stipends and supplies, \$2,358 (Mar. 2006 – Mar. 2007).

Cohen MF, "Control of *Phytophthora ramorum* through foliar application of a surfactant producing plant-colonizing bacterium," US Forest Service Sudden Oak Death Research Program Award, \$15,000 (Oct. 2005 – Dec. 2006).

Submitted:

Cohen MF, Pillai M, Fukuto J. “Algal mat treatment of municipal wastewater: Pollutant fate and byproduct utilization” CSUPERB Joint Ventures Matching Grants Program. Requesting \$25,000 (Jul. 2007 – Dec. 2008).

Peer-Reviewed Publications

Mazzola, M. Zhao, Z., Cohen, M. F. and Raaijmakers, J. M. 2007. Cyclic lipopeptide surfactant production by *Pseudomonas fluorescens* SS101 is not required for suppression of complex *Pythium* spp. populations. *Phytopathology* 97: *in press*

Mazzola M, Brown J, Izzo AD, **Cohen MF** (2007) Mechanism of action and efficacy seed meal-induced pathogen suppression differ in a Brassicaceae species and time-dependent manner. *Phytopathology*, 97:454-460.

Arita NO, **Cohen MF**, Tokuda G, Yamasaki H (2006) Fluorometric detection of nitric oxide with diaminofluoresceins (DAFs): applications and limitations for plant NO research. *In: Nitric Oxide in Plant Growth, Development and Stress Physiology*, Springer Book Series: Plant Cell Monographs. Lamattina, L., Polacco, J.C., Eds., Springer, Plant Cell Monogr. 6:269-280.

Yamasaki H, **Cohen MF** (2006) NO signal at the crossroads: polyamine-induced nitric oxide synthesis in plants? *Trends Plant Sci* 11(11):522-524.

Cohen MF, Mazzola M (2006) Effects of *Brassica napus* seed meal amendment on soil populations of resident bacteria and *Naegleria americana*, and the unsuitability of arachidonic acid as a protozoan-specific marker. *J Protozool Res* 16:16-25.

Cohen MF, Mazzola M (2006) Resident soil bacteria, nitric oxide emission and particle size modulate the effect of *Brassica napus* seed meal on disease incited by *Rhizoctonia solani* and *Pythium* spp. *Plant Soil* 286:75-86.

Cohen MF, Yamasaki H, Mazzola M (2006) Nitric oxide research in agriculture: Bridging the plant and bacterial realms. *In: Abiotic Stress Tolerance in Plants: Toward the improvement of global environment and food*. A.K. Rai and T. Takabe, Eds., Springer Verlag, p. 71-90.

Mazzola M, Brown J, Izzo A, Abi-Ghanem R, **Cohen MF** (2006) Progress towards development of biologically-based strategies for the management of apple replant disease. *Phytopathologia Polonica* 39:11-18.

Cohen MF, Yamasaki H, Mazzola M (2005) *Brassica napus* seed meal soil amendment modifies microbial community structure, nitric oxide production and incidence of *Rhizoctonia* root rot. *Soil Biol Biochem* 37(7):1215-1227.

Cohen MF, Han HY, Mazzola M (2004) Molecular and physiological comparison of *Azospirillum* spp. isolated from *Rhizoctonia solani* mycelia, wheat rhizosphere and human skin wounds. *Can J Microbiol* 50:291-297.

Cohen MF, Mazzola M (2004) A reason to be optimistic about biodiesel: Seed meal as a valuable soil amendment. *Trends Biotechnol* 22(5):210-211.

- Cohen MF**, Yamasaki H, Mazzola, M (2004) Bioremediation of soils by plant-microbe systems. *Int J Green Energy* 1(3):301-312.
- Cohen MF**, Meziane T, Yamasaki H (2004) Photocarotenogenesis by a *Rhodococcus* isolated from the symbiotic fern *Azolla*. *Endocytobiosis Cell Res* 15, 350-355.
- Cohen MF**, Yamasaki H (2003) Involvement of nitric oxide synthase in sucrose-enhanced hydrogen peroxide tolerance of *Rhodococcus* sp. strain APG1, a plant-colonizing bacterium. *Nitric Oxide* 9(1):1-9.
- Cohen MF**, Williams J, Yamasaki H (2002) Biodegradation of diesel fuel by an *Azolla*-derived bacterial consortium. *J Environ Sci Health A37(9):1593-1606*.
- Cohen MF**, Meziane T, Tsuchiya M, Yamasaki H (2002) Feeding deterrence of *Azolla* in relation to deoxyanthocyanin and fatty acid composition. *Aquatic Bot* 74:181-187.
- Cohen MF**, Sakihama Y, Takagi YC, Ichiba T, Yamasaki H (2002) Synergistic effect of deoxyanthocyanins from the symbiotic fern *Azolla* on *hrmA* gene induction in the cyanobacterium *Nostoc punctiforme*. *Mol Plant-Microbe Interact* 15(9):875-882.
- Sakihama Y, **Cohen MF**, Grace SC, Yamasaki H (2002) Plant phenolic antioxidant and prooxidant activities: phenolics-induced oxidative damage mediated by metals in plants. *Toxicology* 177(1):67-80.
- Cohen MF**, Sakihama, Y, Yamasaki H (2001) Roles of plant flavonoids in interactions with microbes: from protection against pathogens to the mediation of mutualism. *Recent Res Devel Plant Physiol* 2:157-173.
- Cohen MF**, Yamasaki H (2000) Flavonoid induced expression of a symbiosis-related gene in the cyanobacterium *Nostoc punctiforme*. *J Bacteriol* 182:4644-4646.
- Cohen MF**, Cai Y, Wolk CP, Meeks JC (1998) Transposon mutagenesis of heterocyst-forming filamentous cyanobacteria. *Methods Enzymol* 297:3-17.
- Cohen MF**, Meeks JC (1997) A hormogonium regulating locus, *hrmUA*, of the cyanobacterium *Nostoc punctiforme* strain ATCC 29133 and its response to an extract of a symbiotic plant partner *Anthoceros punctatus*. *Mol Plant-Microbe Interact* 10:280-289.
- Campbell EL, **Cohen MF**, Meeks JC (1997) A polyketide-synthase-like gene is involved in the synthesis of heterocyst glycolipids in *Nostoc punctiforme* strain ATCC 29133. *Arch Microbiol* 167:251-258.
- Campbell EL, Hagen KD, **Cohen MF**, Summers ML, Meeks JC (1996) The *devR* gene product is characteristic of receivers of two-component regulatory systems and is essential for heterocyst development in the filamentous cyanobacterium *Nostoc* sp. strain ATCC 29133. *J Bacteriol* 178:2037-2043.
- Cohen MF**, Wallis JG, Campbell EL, Meeks JC (1994) Transposon mutagenesis of *Nostoc* sp. strain ATCC 29133, a filamentous cyanobacterium with multiple differentiation alternatives. *Microbiology* 140:3233-3240.

Conference Proceedings

Mazzola M, Cohen MF (2005) Suppression of Rhizoctonia root rot by *Streptomyces* in *Brassica* seed meal-amended soil. pp. 111.1-111.3, In, Proceedings of the Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions. MBAO, Fresno, CA.

Popular Press and Non Peer-Reviewed Professional Publications

Author of article:

Cohen MF, Lauria C (August 23, 2006) Algae-based fuel: Transforming wastewater into green gold. *The Press Democrat*, p. B7.

Cohen MF, Mazzola M, Yamasaki H (2006) Nitrogen oxidations in plant-bacterium interactions. *Microbe* 1(8):247.

Cohen MF (2005) Nitrate and virulence. *ASM News* 71(3):106.

Subject of report:

Bright G (Jan. 2007) Interviewed for report on the state of biotechnology in Sonoma Co. KSRO Radio.

The Press Democrat Editorial Board (July 21, 2006) Sudden hope: Could a hungry amoeba help save local oak forests? *The Press Democrat*, p. B4.

Norberg B (July 19, 2006) Amoeba may eat sudden oak death fungus. *The Press Democrat*, p. B1.

Suszkiv J (2006) Brassica's pest control role in apple orchards clarified. *Agricultural Research* 54(4):22.

Invited Speaker

"*Phytophthora ramorum*-consuming amoebas from Annadel State Park," Presented at The Workshop on *Forest management in western Sonoma County: Sudden Oak Death (Phytophthora ramorum) and other issues for small landowners*, Guerneville, CA, July 20, 2006.

"Remediating contaminated environments with the water fern *Azolla*," Presented at the Sonoma State University Biology Department Colloquium, Stevenson 1002, September 29, 2005.

"Suppression of Root Rot Diseases by *Brassica* spp. Seed Meal Amendments," University of the Ryukyus, Center of Molecular Biosciences, 21st Century Center of Excellence, Third Invited Seminar, Dec. 14, 2004.

Posters Presented at Meetings

Mazzola M, Zhao X, **Cohen MF**, Raaijmakers JM (2007) Cyclic lipopeptide surfactant production by *Pseudomonas fluorescens* SS101 is not required for suppression of complex *Pythium* spp. populations. Annual Meeting of the American Phytopathological Society. San Diego (July 28 – Aug. 1).

Robertson T*, Kozlowski K*, Lauria CH*, **Cohen MF** (2007) Integrated wastewater treatment and biogas production by algae and hydrophytes. Plant Biology and Botany 2007 Joint Congress. Chicago, IL (July 7-11).

Lauria CH*, Robertson T*, Kozlowski J*, Britton W, **Cohen MF** (2007) Nutrient removal from municipal wastewater effluent by an algal assemblage and production of fuel from harvested biomass. 17th Annual Meeting of the Northern California Regional Chapter of the Society of Environmental Toxicology and Chemistry. Berkeley, CA (May 9).

Cohen MF, Yamamoto E*, Rank N, Mazzola M (2007) Microbial- and isothiocyanate-mediated control of *Phytophthora* and *Pythium* species. Sudden Oak Death Symposium. Santa Rosa, CA (Mar. 7).

Lauria CH*, **Cohen MF** (2007) Development of an algal-mat bioreactor for municipal wastewater treatment and biofuel production. RSCAP Symposium (Feb. 28).

Lauria CH*, **Cohen MF** (2007) Development of an algal-mat bioreactor for municipal wastewater treatment and biofuel production. Nineteenth CSU Biotechnology Symposium, Los Angeles, CA (Jan. 12-14).

Cohen MF, Condeso E, Anacker BL, Rank N, Mazzola M (2006) Biologically-based means for control of oomycete phytopathogens. The Sixth California Oak Symposium. Rohnert Park, CA (Oct. 9 –12).

Mazzola M, Hoagland L, Carpenter-Boggs L, Abi-Ghanem R, **Cohen MF** (2006) Contribution of resident soil microorganisms to brassicaceae seed meal-induced disease and weed suppression. Second International Biofumigation Symposium. University of Idaho, Moscow (June 25 – 29).

Cohen MF, McLaughlin K*, Luther D*, Ritz L*, Mazzola M (2006) Glycerol-byproduct utilization by *Pseudomonas*: A strategy to bolster biodiesel and biological control. AgBiotech2006, Fish Camp, CA (March 17-19).

Cohen MF, Lauria C*, Mazzola M (2006) Controlling oomycete phytopathogens with a surfactant-producing bacterium. Eighteenth CSU Biotechnology Symposium, San Jose, CA. Book of Abstracts, A35.

Cohen MF, Mazzola M (2005) Suppression of Rhizoctonia root rot by *Streptomyces* in *Brassica napus* seed meal-amended soil. Annual Meeting of the American Society of Plant Biologists, Seattle, WA. Book of Abstracts, A348.

Cohen MF, Brown J, Mazzola M (2005) Infectivity of *Pythium* toward apple seedlings in soil amended with low-glucosinolate *Brassica napus* seed meal. Annual Meeting of the American Phytopathological Society, Anaheim, CA. *Phytopathology*, 95:S20.

* SSU student

Cohen MF, Yamasaki Y, Mazzola M (2004) Suppression of *Rhizoctonia* root rot and increased recovery of NOS+ *Streptomyces* spp. in rapeseed meal amended soils. Annual Meeting of the American Phytopathological Society, Anaheim, CA. *Phytopathology*, 94:S20.

Cohen MF, Yamasaki H (2004) Mutual interactions between plant and plant-colonizing bacterium through NO production. The 3rd International Conference on the Biology, Chemistry, and Therapeutic Applications of Nitric Oxide. Nara, Japan. *Nitric Oxide*, 11:60-61.

Cohen MF, Yamamoto E*, Arita N*, Yamasaki Y, Mazzola M (2004) Stimulation of bacterial nitric oxide production and suppression of fungal root disease of apple following soil amendment with *Brassica napus* seed meal. Annual Meeting of the American Association for the Advancement of Science, Seattle, WA. Book of Abstracts, A105.

Cohen MF, Yamasaki H, Mazzola M (2003) Role of enhanced nitric oxide production by soil bacteria in suppression of the fungal plant pathogen *Rhizoctonia solani*. 10th Annual Meeting of the Society for Free Radical Biology & Medicine, Seattle, WA. Supplement to *Free Radic Biol Med*, 35:S177.

Cohen MF, Meziane T, Yamasaki H (2001) Symbiotic relevance of traits including sucrose-enhanced H₂O₂ tolerance in a nitrifying bacterium isolated from the fern *Azolla*. Eighth International Congress on Endocytobiology and Symbiosis, Nagoya, Japan. Book of Abstracts, 150.

Cohen MF, Takagi Y, Kainuma M, Yamasaki H (2001) Potential symbiotic and protective activities of compounds from the water fern *Azolla*. Annual Meeting of the Japanese Society of Plant Physiologists, Fukuoka, Japan. Supplement to *Plant Cell Physiol*, 42:s125.

Cohen MF, Dyer DL, Sharifi BG, Said HM, Rubin SA (1998) Characterization and cloning of the rat vascular smooth muscle folate transporter. 71st Meeting of the American Heart Association, Houston, TX. Supplement to *Circulation*, 98:I-822.

Cohen MF, Dyer DL, Bui TD, Said HM, Rubin SA (1998) Characterization of a specific carrier-mediated system for ascorbic acid (vitamin C) uptake by vascular smooth muscle cells. 71st Meeting of the American Heart Association, Houston, TX. Supplement to *Circulation*, 98:I-821.

Cohen MF, Meeks JC (1994) A hormogonium-regulating locus in *Nostoc punctiforme* strain ATCC 29133. International Symposium on Photosynthetic Prokaryotes, Urbino, Italy, Book of Abstracts, 115.

Cohen MF, Meeks JC (1991 – 1995, yearly) West Coast Bacterial Physiologists Conference, Asilomar CA.

Scholarly Activities

Scientific Society Memberships & Committee Assignments:

Japan Society for the Promotion of Science USA Alumni Association

American Society for Microbiology, Member

International Phycological Society, Member

Okinawa International Conference on Longevity, Scientific Program Committee (2000-2001)

Editing:

Books:

Kamamizu-Katoh S (2004) “English Conversation at the Lab for Bioresearch”, English Language Ed., **MF Cohen**, Yodosha Co. Ltd., Tokyo.

Itokazu D, Wilcox B, **Cohen MF**, Wilcox C, Ashimine K (2001) Okinawa International Conference on Longevity, Book of Abstracts, J Okinawa Chubu Hospital, vol. S27, 34 pages.

Journal:

Asian Journal of Plant Pathology, Editorial Board Member (term: Aug. 2006 to July 2009).

Advanced Courses / Professional Development Seminars

Emerging Contaminants in Wastewater, Water Environment Federation webcast, Moderator S. Jeyanayagam, Santa Rosa Laguna Wastewater Treatment Plant, Santa Rosa, Dec. 6, 2005.

The Evolution of Evolution, National Science Foundation Chautauqua Short Course Program, Instructors M. Gregory and B. Goldstein, San Francisco State University, California Academy of Sciences in Golden Gate Park, San Francisco, June 4-6, 1996.