

A. vitis.

2001 — 2004 Co-advisor of Thai graduate student, Supaporn Kaewnum, supported by Royal Golden Jubilee Ph.D. Program through Kasetsart University, Thailand

SABBATICALS AND STUDY LEAVES

1987-88 Distinguished Visiting Scholar, Waite Institute, University of Adelaide, South Australia

HONORS AND AWARDS

Ciba-Geigy Award presented by the American Phytopathological Society (APS), 1986

Lee M. Hutchins Award presented by APS, 1990.

Fellow, APS, 1997

Adjunct Professor, Graduate School, Kasetsart University, Bangkok, Thailand

REPRESENTATIVE ACADEMIC RESPONSIBILITIES

CURRENT ADMINISTRATIVE RESPONSIBILITIES

Department Chair

RESEARCH RESPONSIBILITIES

Research involves diseases of fruit crops with major emphasis on bacterial pathogens. Objectives of grape crown gall disease research include development of disease control through pathogen diagnosis, cultural methods and use of biological control. Mechanisms by which the pathogen *Agrobacterium vitis*, induces grape-specific necrosis, a hypersensitive response on non-hosts and by which some non-tumorigenic strains function as biological controls are being studied at the molecular level. A new project for determining mechanisms by which *Xylella fastidiosa* causes Pierce's Disease of grape was initiated in 2002.

For apple russet we are identifying associated microbial causes, determining how they cause russet and developing control strategies.

- **Current Postdoctoral Associates**
Guixia Hao
- **Past Postdoctoral Associates**
Desen Zheng, 2000; Pervin Basaran, 2000; Thomas Herlache, 1999
- **Other Current Cooperating Research Professionals**
Sigrid Carle (Hobart and William Smith Colleges)

EXTENSION RESPONSIBILITIES

- **Current Program Work Team/Program Committee Participation**
Applied Research and Extension Program Council for Agriculture and Food Systems, 2002, 2003

GRADUATE FIELD MEMBERSHIPS

Plant Pathology

GRADUATE MAJORS

- **Current**
Jodi Creasap, 2005
- **Total Completed**
Anthony Ceasar, 1987
Christopher Becker, 1990
Tze-chung Huang, 1996
Maria-Rosa Corral Garcia, 1998
Thomas Herlache, 1999

REPRESENTATIVE PROFESSIONAL ACTIVITIES

PROFESSIONAL SOCIETIES

AAAS

American Phytopathological Society

EDITORIAL BOARDS

Canadian Journal of Plant Pathology, 1990 - 1993

American Phytopathological Society Press, Senior Editor, 1997- 1999

COMMITTEE ASSIGNMENTS

International/National:

APS Awards Committee, 2000- 2002
APS Council, 1998-2001

• State/Local:

Zoning Committee for Cornell Ag-Tech Park at Geneva

• University:

Recombinant DNA Committee, 1997 — 2000
University Appeals, 2000 — 2003

• College:

College Policy Committee, 1995 - 1998
College Financial Advisory Committee 2003 - present
Geneva Experiment Station Safety Committee, 1990 - 2002
College GMO Advisory Group, 2000- present
Geneva Central Emergency Preparedness, 2002- 2003

REPRESENTATIVE PROFESSIONAL CONTRIBUTIONS**CONFERENCES/WORKSHOPS/IN-SERVICE PARTICIPATION (since 2000)**

Burr, T. J., Kovacs, L., Sule, S., and Szegedi, E. 2002. Breeding for Crown Gall Resistance: Traditional and Molecular Approaches. Proceedings of VIIIth International Conference on Grape Genetics and Breeding. Kecskemet, Hungary, 26 — 31 August.

Holden, M., Krastanova, S., Xue, B., Pang, S., Sekiya, Gonsalves, D. and Burr, T. J. 2002. Genetic engineering of grape for resistance to crown gall. Proceedings of VIIIth International Conference on Grape Genetics and Breeding. Kecskemet, Hungary, 26 — 31 August.

Burr, T. J. 2000. Future development of biological and chemical controls. Proc. Int. Conf. Of Plant Pathogenic Bacteria. Prince Edward Island. July 28 - 31, 2000

RECENT INVITED PRESENTATIONS (2002)

Annual Meeting of American Phytopathological Society, Milwaukee, August, 2002

Biological controls for bacterial diseases: How do they work and how effective are they?

The First International Conference on Tropical and Subtropical Plant Diseases, Chiang Mai, Thailand Nov. 5-8, 2002. Biology and control of *Agrobacterium*, the natural genetic engineer.

RESEARCH PANELS

NRI, Plant Genome, 1993

OSQR, USDA Review Panel, Beltsville MD. Nov. 2002

USDA, Viticultural Consortium West, Napa, CA. Mar. 2003

RESEARCH AND EXTENSION PUBLICATIONS**RESEARCH:**

Kaewnum, S. Prathuangwong, S. and Burr, T. J. 2005. Aggressiveness of *Xanthomonas axonopodis* pv. *Glycines* isolates to soybean and hypersensitivity responses by other plants. *Plant Pathology* 54: in press

Creasap, J. E., Reid, C. L., Goffinet, M. C., Aloni, R., Ulrich, C. and Burr, T. J. 2005. Effect of wound position, auxin and *Agrobacterium vitis* strain F2.5 on wound-healing and crown gall development in woody grapevine tissue. *Phytopathology* (In Press)

Hao, G., Zhang, H., Zheng, D. and Burr, T. J. 2005. A *luxR* homolog *avhR* in *Agrobacterium vitis* affects the development of a grape-specific necrosis and a tobacco hypersensitive response. *J. Bacteriol.* 187:185-192.

Burr, T. J. 2004. Grape crown gall biology and strategies for control. Foundation Plant Services, UC Davis, FPS Grape Program Newsletter, October 2004.

Zheng, D., Zhang, H., Carle, S., Hao, G., Holden, M. R. and Burr, T. J. 2003. A *luxR* homolog, *aviR*, in *Agrobacterium vitis* is associated with induction of necrosis on grape and a hypersensitive response on tobacco. *Mol. Plant Microbe. Interact.* 16:650-658.

- Herlache T. C., Zhang, H. S., Ried C. L., Carle S. A., Basaran P., Thaker M., Burr, T. J. and Burr, T. J., 2001. Mutations that affect *Agrobacterium vitis* -induced grape necrosis also alter its ability to cause a hypersensitive response on tobacco. *Phytopathology* 91:966 — 972.
- Argun, N., Momol, M. T., Maden, S., Momol, E., Celek, H., and Burr, T. J., 2001. Characterization of *Agrobacterium vitis* strains that were isolated from the central Anatolia region. *Plant Disease* 83:102-107.
- Ellis, M. A., Madden, L. V., and Burr, T. J. 2000. Effectiveness of fosetyl-aluminum and streptomycin alone and in combination for control of blister spot on 'Mutsu' apples in Ohio and New York. *Plant Health Progress*. on-line doi: 10.1094/PHP-2000-0412-01-RS.
- Burr, T. J., Reid, C. L., Adams, C. E. and Momol, E. A. 1999. Characterization of *Agrobacterium vitis* strains isolated from feral *Vitis riparia* vines. *Plant Disease* 83:102-107
- Huang, T. C. and Burr, T. J. 1999. Characterization of plasmids that encode streptomycin-resistance in bacterial epiphytes of apple. *J. Appl. Microbiol.* 86: 86:741-751.
- Xue B. et al. 1999. Transformation of five grape rootstocks with plant virus genes and a *virE2* gene from *Agrobacterium tumefaciens*. *INVITRO PLANT* 35:226-231.
- Burr, T. J. and Otten, L. 1999. Crown gall of grape: Biology and disease management. *Ann. Rev. Phytopathol.* 37:53-80.
- Alexandrova, M., Bazzi, C. Stefani, E., Anaclerio, F. and Burr, T. J. 1999. Biological control of *Agrobacterium vitis* using non-tumorigenic agrobacteria. *Vitis* 38:31-35.
- Szegedi, E., Sule, S., and Burr, T. J., 1999. *Agrobacterium vitis* strain F2/5 contains tartrate and octopine utilization plasmids which do not encode functions for tumour inhibition on grapevine. *J. Phytopathology* 147:665-669.
- Sule, S. and Burr, T. J. 1998. The effect of resistance of grape rootstocks to crown gall (*Agrobacterium* spp.) on the susceptibility of scions in grape vine cultivars. *Plant Pathology* 47:84-88.
- Momol, E. A., Burr, T. J., Reid, C. L., Momol, M. T. Hseu, S. H. and Otten, L. 1998. Genetic diversity of *Agrobacterium vitis* as determined by DNA fingerprints of the 5'-end of the 23S rRNA gene and random amplified polymorphic DNA. *J. Appl. Microbiol.* 85:685-692.
- Burr, T. J., Bazzi, C., Sule, S. and Otten, L. 1998. Crown gall of grape: biology of *Agrobacterium vitis* and the development of disease control strategies (Feature Article). *Plant Disease* 82:1288-1297.
- Herlache, T. C., Hotchkiss, A. T., Burr, T. J., and Collmer, A. 1997. Characterization of the *Agrobacterium vitis* *pehA* gene and comparison of the encoded polygalacturonase with the homologous enzymes from *Erwinia carotovora* and *Pseudomonas (Burkholderia) solanacearum*. *Appl. Environ Microbiol.* 63:338-346.
- Stover, E. W., Swarz, H. J., and Burr, T. J. 1997. Susceptibility of a diverse collection of *Vitis* genotypes to crown gall caused by *Agrobacterium vitis*. *J. Amer. Soc. Enol. Vitic.* 48:26-32.
- Heidenreich, M. C., Corral-Garcia, M. R., Momol, E. A., and Burr, T. J., 1997. Russet of apple fruit caused by *Aureobasidium pullulans* and *Rhodotorula glutinis*. *Plant Disease* 81:337-342.
- Stover, E. W., Swarz, H. J., and Burr, T. J. 1997. *Agrobacterium vitis*-induced electrolyte leakage in crown gall-susceptible and resistant grape genotypes. *J. Amer. Soc. Enol. Vitic.* 48:145-149.
- Burr, T. J., Reid, C. L., Tagliati, E., Bazzi, C., and Sule, S., 1997. Biological control of grape crown gall by strain F2/5 is not associated with agrocin production or competitions for attachment sites on grape cells. *Phytopathology* 87:706-711.
- Stover, E. W., Swarz, H. J., and Burr, T. J. 1997. Endophytic *Agrobacterium* in crown gall-resistant and susceptible *Vitis* genotypes. *Vitis* 36:21 -26.
- Stover, E. W., Burr, T. J., and Swarz, H. J., 1996. Transformation of crown gall resistant and susceptible *Vitis* genotypes by *Agrobacterium vitis*. *Vitis* 35:29-33.
- Burr, T. J., Reid, C. L., Spittstoesser, D. F., and Yoshimura, M. 1996. Effect of heat treatments on grape bud mortality and survival of *Agrobacterium vitis* in vitro and in dormant grape cuttings. *Am. J. Enol. and Vitic.* 47:119-123
- Otten, L., de Ruffray, P., Momol, E. A., Momol, M. T., and Burr, T. J. 1996. Molecular characterization of North American *Agrobacterium vitis* strains and detection of a new type of Ti plasmid. *Molec. Plant Microbe Interact.* 9:782-786
- Süle, S., Lehoczyk, J., Jennser, G., Nagy, P. and Burr, T. J. 1995. Infection of grapevine roots by

Agrobacterium vitis and *Meloidogyne hapla*. J. Phytopathology 143:169-171.

Burr, T. J., Reid, C. L., Yoshimura, M., Momol, E. A., and Bazzi, C. 1995. Survival and tumorigenicity of *Agrobacterium vitis* in living and decaying grape roots and canes in soil. Plant Disease 79:677-682.

Burr, T. J., Matteson, M. C., Smith, C. A., Corral-Garcia, M. R., and Huang, T. C. 1995. Effectiveness of bacteria and yeasts from apple orchards as biological control agents of apple scab. Biological Control 6:151-157.

Becker, C. M., and Burr, T. J., 1994. Effect of discontinuous wetting periods on survival of conidia of *Venturia inaequalis* on apple foliage. Phytopathology 84:372-378.

Süle, S., Mozsar, J., and Burr, T. J., 1994. Crown gall resistance in *Vitis* spp. and grapevine rootstocks. Phytopathology 84:607-611.

Burr, T. J., Norelli, J. L., Reid, C. L., Capron, L. K., Nelson, L. S., Aldwinckle, H. S., and Wilcox, W. F. 1993. Streptomycin-resistant bacteria associated with fire blight infections. Plant Disease 77:63-66

Burr, T. J., Reid, C. L., Katz, B. H., Tagliati, M. E., Bazzi, C. and Breth, D. I., 1993. Failure of *Agrobacterium radiobacter* strain K-84 to control crown gall of raspberry. HortScience 28:1017-1019.

Burr, T. J., and Reid, C. L., 1993. Biological Control of Grape Crown Gall with nontumorigenic *Agrobacterium vitis* strain F2/5. Am. J. Enol. and Vitic 45:213-219.

Becker, C. M., and Burr, T. J., 1992. Survival of conidia of *Venturia inaequalis* in apple buds. Plant Disease 76:36-40.

Wample, R. L., Bary, A. and Burr, T. J., 1991. Heat tolerance of dormant *Vitis vinifera* L. cuttings. Am. J. of Enol and Vit. 42:67-72.

McGuire, R. G., Rodriguez-Palenzuela, P., Collmer, A., and Burr, T. J., 1991. Polygalacturonase production by *Agrobacterium tumefaciens* biovar 3. Appl. Environ. Microbiol. 57:660-664.

Caesar, A. J., and Burr, T. J., 1991. Effect of conditioning, Betaine and sucrose on survival of rhizobacteria in powder formulations. Appl. Environ. Microbiol. 57:168-172.

Burr, T. J., Katz, B. H., Abawi, G. S., and Crosier, D. 1991. Comparison of tumorigenic strains of *Erwinia herbicola* isolated from table beet to *E. herbicola* pv. *gypsophilae*. Plant Disease 75:855-858.

Bazzi, C., Stefani, E., Gozzi, R., and Burr, T. J., 1991. Hot water treatment of grape propagation material: its effects on *Agrobacterium* and on vine growth. Vitis 30:177-187.

Brisset, M. N., Rodriguez-Palenzuela, P., Burr, T. J., and Collmer, A. 1991. Attachment, chemotaxis, and multiplication of *Agrobacterium vitis* and *A. tumefaciens* biovar 1 on grapevine and pea. Appl. Environ. Microbiol. 57:3178-3182.

Rodriguez-Palenzuela, P., Burr, T. J. and Collmer, A. 1991. Polygalacturonase is a virulence factor in *Agrobacterium tumefaciens* biovar 3. J. Bacteriol. 173:6547-6552.

Burr, T.J., Norelli, J. L., Katz, B. H., and Bishop, A. L. 1990. Use of Ti-plasmid DNA probes for determining tumorigenicity of *Agrobacterium* strains. Appl. Environ. Microbiol. 56:1782-1785

Norelli, J. L., Burr, T. J., Lo Cicero, A. M., Gilbert, M. T. and Katz, B. H., 1990. Homologous streptomycin-resistance gene present among diverse bacteria in New York apple orchards. Appl. Environ. Microbiol. 57:486-491.

Chen, G. Y., Legard, D. E., Hunter, J. E., and Burr, T. J. 1989. Comparison of *Pseudomonas syringae* pv. *syringae* strains recovered from bacterial brown spot lesions on snap bean with strains from other sources by a bean pod assay. Plant Disease 73:419-423.

Burr, T. J., Ophel, K., and Kerr, A. 1989. Effect of hot water treatment on systemic *Agrobacterium tumefaciens* biovar 3 in dormant grape cuttings. Plant Disease 73:242-245.

Bishop, A. L., Mittak, V. L., Katz, B. H., and Burr, T. J. 1989. A Monoclonal antibody specific to *Agrobacterium tumefaciens* biovar 3 and its utilization for indexing grapevine propagation material. Phytopathology 79:995-998.

Burr, T. J., Katz, B. H., Bishop, A. L., Meyers, C. A. and Mittak, V. L. 1988. Effect of shoot age and tip culture propagation on grapes on systemic infestation by *Agrobacterium tumefaciens* biovar 3. Am. J. Enol. Vitic. 39:67-70.

Burr, T. J., Norelli, J. L., Katz, B. Wilcox, W. F., and Hoying, S. A. 1988. Streptomycin resistance of

- Pseudomonas syringae* pv. *papulans* in apple orchards and its association with a conjugative plasmid. *Phytopathology* 78:410-413.
- Bishop, A. L., Katz, B. H., and Burr, T. J. 1988. Infection of grapevines by soilborne *Agrobacterium tumefaciens* biovar 3, and population dynamics in host and nonhost rhizospheres. *Phytopathology* 78: 945-948.
- Bazzi, C., Minardi, P., Burr, T. J., Katz, B. H., and Bishop, A. L. 1988. Monoclonal and polyclonal antibodies in a comparative serological study of *Agrobacterium* Conn. biovars. *Phytopath. Medit.* 26:129-131.
- Ophel, K., Burr, T. J., Magarey, P. A., and Kerr, A. 1988. Detection of *Agrobacterium tumefaciens* biovar 3 in South Australia grapevine propagation material. *Australasian Plant Pathology* 17:61-66.
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- Burr, T. J., Bishop, A. L., Katz, B. H., Blanchard, L. M., and Bazzi, C. 1987. A root-specific decay of grapevine caused by *Agrobacterium tumefaciens* and *A. radiobacter* biovar 3. *Phytopathology* 77:1424-1427.
- Caesar, A. J., and Burr, T. J. 1987. Growth promotion of apple seedlings and rootstocks by specific strains of bacteria. *Phytopathology* 77:1583-1588.
- Burr, T. J., Katz, B. H., and Bishop, A. L. 1987. Populations of *Agrobacterium* in vineyard and nonvineyard soils and grape roots in vineyards and nurseries. *Plant Disease* 71:617-620.
- Burr, T. J., and Katz, B. H. 1984. Overwintering and distribution pattern of *Pseudomonas syringae* pv. *papulans* and pv. *syringae* in apple buds. *Plant Dis.* 68: 383-385.
- Burr, T. J., and Katz, B. H. 1984. Grapevine cuttings as potential sites of survival and means of dissemination of *Agrobacterium tumefaciens*. *Plant Dis.* 68:976-978.
- Rosenberger, D. A., Burr, T. J., and Gilpatrick J. D. 1983. Failure of canker removal and postharvest sprays to control *Nectria* twig blight on apples. *Plant Dis* 68:976-978.
- Burr, T. J., and Katz, B. H. 1983. Isolation of *Agrobacterium tumefaciens* biovar 3 from grapevine galls and sap and vineyard soil. *Phytopathology* 73:163-165.
- Rosenberger, D. A., and Burr, T. J. 1982. Fruit decays of peach and apple caused by *Phomopsis mali*. *Plant Dis.* 66:1073-1075.
- Burr, T. J., and Katz, B. 1982. Evaluation of a selective medium for detecting *Pseudomonas syringae* pv. *papulans* and *P. syringae* pv. *syringae* in apple orchards. *Phytopathology* 72:533-538.
- Jeffers, S. N., Aldwinckle, H. S., Burr, T. J., and Arneson, P. A, 1982. *Phytophthora* and *Pythium* species associated with crown rot in New York apple orchards. *Phytopathology* 72:533-538.
- Jeffers, S. N., Aldwinckle, H. S., Burr, T. J., and Arneson, P. A. 1981. An excised twig assay for comparison of virulence of apple tree crown rot pathogens in vitro. *Plant Disease* 65:823-825.
- Burr, T. J. , and Hurwitz, B. 1981. Seasonal susceptibility of Mutsu apples to *Pseudomonas syringae* pv. *papulans*. *Plant Disease* 65:334-336.
- Burr, T. J., and Hurwitz, B. 1980. Leaf spot of *Vitis vinifera* L. caused by *Xanthomonas* sp. *Plant Dis.* 64:698-700.
- Burr, T. J., and Hurwitz, B. 1979. The etiology of blister spot of 'Mutsu' apple in New York State. *Plant Dis. Rep.* 63:157-160.
- Burr, T. J., Hunter, J. E., and Ogawa, J. M. 1978. A root rot of apple caused by *Rhizoctonia solani* in New York nurseries. *Plant Dis. Rep.* 62:476-479.
- Burr, T. J., Schroth, M. N., and Suslow, T. 1978. Increased potato yields by treatment of seed pieces with specific strains of *Pseudomonas fluorescens* and *P. putida*. *Phytopathology* 68:1377-1383.
- Burr, T. J., and Schroth, M. N. 1977. Occurrence of soft-rot *Erwinia* spp. in soil and plant material. *Phytopathology* 67:1382-1387.
- Stanghellini, M. E., and Burr, T. J. 1973. Germination in vivo of *Pythium aphanidermatum* oospores and sporangia. *Phytopathology* 63:1493-1496.
- Stanghellini, M. E., and Burr, T. J. 1973. Effect of soil water potential on disease incidence and oospore germination of *Pythium aphanidermatum*. *Phytopathology* 63:1496-1498.
- Burr, T. J., and Stanghellini, M. E. 1973. Propagule nature and density of *Pythium aphanidermatum*

in field soil. *Phytopathology* 63:1499-1501.

EXTENSION (from 1995):

Burr, Thomas J., 2003. Crown gall rears up in 2003. *Finger Lakes Vineyard Notes*. August 6 pp. 1-2.

Burr, Thomas J., 2002. Why crown gall occurs and what can be done to manage it. *Wine East* July-August, 2002 pp.10 — 15.

Goffinet, M. C., Burr, T. J., and Heidenreich, M. C., 2002. Anatomy of apple russet caused by the fungus *Aureobasidium pullulans*. *NY Fruit Quarterly* (July).

Heidenreich, M. C., Burr, T. J., Breth, D., Hoying, S., Lungerman, K., Torrice, C. and Fargione, M., 2000. Fruit russet in the Empire State: An industry perspective. *NY Fruit Quarterly*. 8 (2):22-24.

Burr, T. J. 1997. Getting Control on Crown Gall. *Vineyard and Winery Management* 23:60-63.

Burr, T. J. and Heidenreich, M. C. 1997. Reduce russet by fighting fungi. *Fruit Grower*. May, 1997.

Burr, T. J., Matteson, M. C., and Corral-Garcia, M. R. 1995. Russet of apple is caused by yeasts that commonly survive in orchards. *N Y Fruit Quarterly*: 3:7-8.

Burr, T. J., and Huang, T. C. 1995. Blister spot of apples: Developing methods for control. *N Y Fruit Quarterly*: 2:3-5.

Burr, T. J. Biological control of crown gall disease on grape. *Cornell Coop. Extension, Ag. News Service*, 1995.

PROFESSIONAL OVERVIEW AND OBJECTIVES

My overall program emphasizes research and extension on the biology and control of bacterial pathogens. A primary goal is to understand how bacteria communicate with each other and how they interact with plants to cause disease or to function as biological controls. In *Agrobacterium vitis*, the cause of grape crown gall, this involves research on quorum-sensing systems and the subsequent expression of genes that affect plant interactions. Specific interactions include the ability of the bacterium to induce a grape root-specific necrosis and to induce a hypersensitive response on non-host plants, such as tobacco. A related goal is to determine how some strains of *A. vitis* are able to prevent the development of crown gall specifically on grape and to develop these biological controls for commercial use. Similar objectives are being pursued for *Xylella fastidiosa*, the cause of Pierce's Disease of grape and for *Xanthomonas campestris* pv *glycines*, the cause of pustule disease of soybean. Extension goals include the education of growers with regard to bacterial diseases and the implementation of research in the development of effective, environmentally and economically-sound strategies for disease control.

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