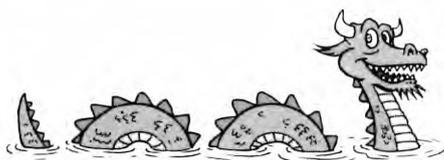


VOLUME LXXXIV • NO. 24
JUNE 13 - 20, 2003**Summer Research/Service Opportunity
for Teens**

The Youth Agricultural Research Program, a program of Ontario County 4-H, is recruiting a team of teen researchers to work in its new research garden this summer. The garden, located at the Community Garden behind Granger Homestead in Canandaigua, will serve as a natural laboratory in which to explore the variables that influence plant growth and development. It will also provide an opportunity to examine the issues surrounding hunger in local communities, including a chance to become directly involved in hunger relief by donating the food raised to area food pantries and soup kitchens. Participants must be ready and willing to exercise their minds, bodies, and spirits for a good cause. They will work collaboratively on hands-on projects chosen and designed by the group. Teens entering grades 8 through 12 this fall are eligible to participate. Previous 4-H experience is not required. For more information, contact Pat Blakeslee at Ontario County 4-H, 585-394-3977, ext. 10.

*Learn from the
mistakes of others.
You can't live long
enough to make
them all yourself.*

**Seabreeze Tickets**

It's time to start thinking of everything that Summer has to offer... and what better place than Seabreeze Amusement Park.

There are more than 75 great attractions at Seabreeze. You'll find thrilling adult rides, classic family rides, cool kiddie rides and the waterpark.

Parking is free. Tickets are \$14.95. A savings of \$3.00. Kid passes are \$13.95 for kids under 48" in height. Kids' 2 and under are free. These passes are valid weekends May 24 - June 22, 2003 and 7 days a week from June 24 through Labor Day (holidays included).

See Nancy Long for tickets in the front office of the Food Research Lab, room 150. Her office hours are 8:30 - 1:30. **Enjoy!**

**When Bacteria and Plants
Communicate and Biologists Listen**

Armies of disease-causing bacteria that communicate with each other. Plants—like tobacco—that sense the foreign invaders and respond by inducing cell death. Plants—like grapes—that can't and die. Scientists toiling in lab and field to give plants the advantage by enhancing or inhibiting the communication.

It sounds like the stuff of science fiction or some dark secret from the defense department, but it's not. It's cutting-edge biology in the 21st century.

Researchers from the Experiment Station, Hobart and William Smith Colleges (HWS), and China are working on certain types of bacteria called *Agrobacterium* that have the ability to signal each other, and then using these signals to control interactions with plants.

"The real purpose behind the work is to identify processes that are used by bacteria when they interact with plants, and then enhance or inhibit the communication, depending on which plant is hosting the invading bacterium," says plant pathologist Thomas Burr.

The research team has been studying the interactions between the pathogenic bacterium *Agrobacterium vitis* and two plants: tobacco and its natural host, grape. Tobacco is successful at evading infection by *A. vitis*, but grape is not. The bacterium causes two diseases of grape: necrosis of roots, and crown gall that results in tumor-like growths on the trunks and canes. Both diseases reduce the productivity of the grapevine and eventually cause the plant to die.

"Grape is an important crop plant in wine-producing areas, including New York, so the control of *A. vitis* infection is of great interest," says Sigrid Carle, the William Smith biologist who is also working on the problem. She notes that the team is interested in learning as much as possible about the infection process, and then, with that knowledge, being able to genetically engineer a defense response to *A. vitis* in grape that would protect it from infection.

NYSAES plant pathologists Desen Zheng, Guixia Hao, Michele Holden, Cheryl Reid, Yaxin Li, and Hongsheng Zhang from Nanjing Agricultural University in China are also working on the project. Their first paper on quorum-sensing in *A. vitis* was published this month in the journal "Molecular Plant-Microbe Interactions."

"We were very excited to find that *A. vitis*, like some other bacteria, produces signal molecules called autoinducers, or bacterial pheromones, that allow the bacterial cells to communicate with each other when they are together in high numbers," said Burr. Microbiologists call the communication process "quorum-sensing." The chemical signals are detected by surrounding plant cells and result in selective gene expression. Quorum-sensing systems are being studied in many different bacteria including those that cause diseases of plants as well as human pathogens.

Other Cornell scientists have also helped with the work. "We are fortunate to have scientists in Ithaca like Stephen Winans and Anatol Eberhard who are world-renowned in the area of quorum-sensing," said Burr. "Winans has studied extensively an autoinducer in *A. tumefaciens* that regulates the transfer of crown gall disease genes between bacteria.

(Continued on page 2)



Agrobacterium vitis strains cause a hypersensitive response when infiltrated into tobacco leaf panels, whereas *A. tumefaciens* strains, such as C58, does not.



Crown gall commonly develops on the lower trunks of grapevines (arrow) that are injured from cold temperatures.

CALENDAR of EVENTS

JUNE 13 - 20, 2003

LTC

Date: Wednesday, June 18, 2003
Time: 8 AM - Noon
Place: LTC
Subject: Open Lab
Facilitators: Jane Irwin

FITNESS

Aerobics

Date: Mon. & Fri.
Time: 12:10 - 1 PM
Place: Sawdust Cafe

Taekardio

Date: Mon. & Wed.
Time: 12:10 - 1 PM
Place: Jordan Hall Auditorium

CLASSIFIED

FREE TO A LOVING HOME: 6 week old kittens. Yellow and white long haired tigers, gray, black, and black & white. Please contact Amy at 787-2314 or ada10 for more information

FOR SALE: Raymond electric truck- walk behind pallet mover. 2,000 lb. capacity. Good condition. Asking \$500 OBO. Entomology Department surplus equipment. Contact Cindy Smith at x2322 or cls47

WANTED: Used metal dog crate for occasional transport of labrador retriever. Please contact Lynn Braband at LAB45@nysaes.cornell.edu or 787-2408

CAMPRENTAL: Cayuga Lake. \$75 a night, \$500 a week. Week runs from Tues 3pm to Tues 11am, or Sat to Sat etc. Deposit required, 50% or \$100 whichever is less-non refundable. You must bring your own towels and linens. There is one queen size bed upstairs and a full size futon downstairs. Contact Mark at 315-549-0145 for more information

FOR SALE: Baby rabbits. Lop-eared, assorted colors. \$10 each. JWL2. 539-3155, or x2407

FOR SALE: 1993 Ford Thunderbird XL, 6 cyl., automatic, AC, excellent condition, runs perfect, body very good, \$1900. Call Armando at 787-2257

FOR SALE: 97 Honda Civic XL, 5 speed sedan, 89,000 miles, excellent condition, new tires & muffler system. \$5,900. Call Gemma at 787-2248 or gro2

FOR SALE: Lexmark - multi function (print, scan, fax, copy). Works with PC only, not Mac. Never used (see previous sentence). Originally paid \$170, will sell for \$125. Contact Don Downing at x2273 or dld3@cornell.edu

BEACH HOUSE vacation getaway on beautiful, southwest shore of Canandaigua Lake, is only a 45 minute drive from Geneva, 10 minutes from Naples. Swim, sun, fish, romance, relax, loaf, wine country, Reservoir Creek and Bristol Harbour golf courses, Bristol Valley Theater, Grape Festival, etc. Situated right on the water, suitable 1-2 couples or small family. Very nice beach area. Rowboat and canoe included. A few summer openings remain in July and August. Reduced rates by week or weekend in May-June and September-October. Interested? Contact Elaine at elg2



SAVE THE DATE
July 11, 2003
16th Annual
Station Club
Golf Tournament

(BURR, continued)

"Eberhard first discovered autoinducers that regulate light production by marine bacteria, and has been instrumental in helping to identify specific compounds produced by *A. vitis*." The group has determined that *A. vitis* produces at least six different autoinducers. Each of them may be responsible for regulation of different genes.

In the case of grapes, bacterial genes regulated by quorum-sensing result in necrosis of the roots. In tobacco, quorum-sensing regulates genes in *A. vitis* that, when expressed, cause a hypersensitive response (HR) that scientists believe is related to disease defense.

An HR responsive plant senses the foreign invader, and responds by inducing cell death. Plant cells in the locality of the bacteria, as well as the bacterium itself dies, but the plant lives, and overcomes the invasion. Biologists want to be able to induce the same self-defense response in grape and other commercial crops.

"Some strains of *A. vitis* do not cause crown gall but, in fact, prevent crown gall from forming on grape," said Burr. The team recently discovered a single quorum-sensing gene in such a strain called F2/5. When mutated, it leads to total loss of the necrosis, HR, and biocontrol phenotypes. "This suggests that the underlying mechanisms associated with these responses are related. It offers an excellent system for studying important plant-bacterial interactions," said Burr.

Burr and Carle's team is working on genetic modifications in *A. vitis* that affect regulation of the communication process. Their research has shown that certain genes in *A. vitis* can potentially inhibit or enhance the communication process, which offers exciting possibilities for the future. In addition to being able to affect how plants defend themselves against bacterial diseases, scientists and growers hope to be able to use quorum-sensing to inhibit the growth of detrimental bacteria and encourage the process of biological control. The research is funded by the USDA and NRI Grant Program.

J. Zakour



The eighth annual Station Bike and Walk Week was another smashing success, with approximately 100 people participating. If you didn't make it to breakfast, here's what you missed: Hotcakes, potato casserole and sausage (John VanderWeide & Lou Ann Rago), fruit smoothies and sweet breads (Jennifer Grant & Keith Waldron), exotic fruits and fresh-baked breads (Rixana & Curt Petzoldt), freedom toast! (Ed Lavin) and homemade quiche and rhubarb bread (Holly Lange & Jan Nyrop). Jan Nyrop is pictured here talking breakfast and bikes with Kevin Conley. Many prizes were given away, including Station Club shirts, bicycle paraphernalia, and gift certificates. Thanks to Jennifer Grant & Cheryl TenEyck for organizing, our wonderful chefs, and to the many sponsors: Station Club, the Geneva Bicycle Center, Tops Friendly Markets, Walmart, Madia's Big M, Zapia's Vending, Pepsi, and Lake Beverage. Get ready, Bike & Walk Week 2004 is only 12 months away!

Renaissance Festival

The 27th Annual Renaissance Festival will be held Saturdays and Sundays, July 5th through August 17th, 2003 in Sterling, New York (rain or shine) from 10:00 a.m. - 7:00 p.m.

Once again, Station Club is sponsoring the sale of discount passes: \$16.00 for adults and \$6.99 for children ages 6 to 12 years. Children 5 and under are free.

Anyone interested in purchasing children's tickets for Children's Weekend (July 5th & 6th) must purchase them at the gate.

For more information, please visit the following web site: www.sterlingfestival.com

Tickets are available by contacting Amy Andersen at Extension 2314, by e-mail (ada10) or by stopping by room A103, Barton Lab.

Checks should be made payable to "Station Club". If purchasing tickets with cash, please have exact amount with you.

