

On the grapevine: 'breakthrough' research

BY SUSAN GAWLOWICZ, Aug. 6, 2009 —

Undergraduate research conducted by Han Ming Gan '08 (biotechnology) could someday help protect vineyards from a chronic plant-tumor disease.

Gan worked to identify a bacterium affecting grapevines under the guidance of Larry Buckley, André Hudson, Mike Savka, professors of biological sciences at RIT, and Erno Szegedi, professor at the Research Institute for Viticulture and Enology in Hungary. Gan is the lead author of their paper "Identification of an *rsh* Gene from a *Novosphingobium* sp. Necessary for Quorum-Sensing Signal Accumulation," which appeared in the April issue of the *Journal of Bacteriology*, volume 191, issue no. 8:2551-60.

In what Savka describes as a "bacterial breakthrough," Gan identified the bacterium (*Novosphingobium* sp.) and a specific gene associated with the spread of crown-gall tumor disease. The gene he isolated produces a molecule that triggers a second bacterium (*Agrobacterium tumefaciens*), the pathogen, to cause the infection on grape plants.

"Our work provides new information and knowledge in an area of bacterial environmental responses to stress and nutrient starvation in *Novosphingobium* bacterium co-inhabiting the diseased tissue of the grapevines," says Savka. "Additional work in this area may spin off applications to the wine industry in terms of new or improved methods to protect vineyards from crown gall tumor disease of grape."

Gan is pursuing his doctorate in bacteriology at the University of Technology Malaysia in Johor. His research focuses on bioremediation and the identification and use of bacteria to break down dyes, or coloring agents, from the environment and soil.

In addition to their publication in the *Journal of Bacteriology*, Gan, Savka and Szegedi also co-wrote a paper with Nathaniel Lowe '07 (biotechnology), Vandana Chakravartty '05 (biotechnology) and Russell Scott '06 (biotechnology). Chakravartty and Scott are pursuing doctorates in microbiology at the University of Illinois at Urbana-Champaign and the University of California at Berkeley, respectively.



Han Ming Gan '08