

Researchers get \$4.5M for next generation grapes

Cornell University

Got Concord in the refrigerator, Pinot in the wine rack, or Thompson Seedless in the fruit bowl? These familiar grape varieties will be making room for the next generation of improved grapes, with a boost from two grants totaling \$4.5 million.

The projects, one led by Cornell grape breeder Bruce Reisch, professor of horticulture, and the other by senior extension associate Tim Martinson, take complementary approaches to a common problem: how to make grape breeding more efficient, since new grape varieties can take more than 20 years to breed and evaluate and much longer to reach commercial success. The projects are funded by the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture Specialty Crop Research Initiative (SCRI).

"We are focusing on developing wine, juice, table and raisin grapes with three attributes: fruit quality, cold hardiness and resistance to powdery mildew, a fungal pathogen that is costly to control," said Reisch.

Reisch is working with 24 scientists at all six publicly funded U.S. grape breeding programs on a \$2 million project to streamline genomewide DNA analysis and trait-screening methods to more efficiently identify promising progeny.

His project team also includes Cornell plant pathologists, enologists, scientists with the USDA-Agricultural research Service in Geneva and Ithaca; and experts with Cornell's Life Sciences Core Laboratories for genomics and computation biology.

The linking of DNA markers to specific traits -- such as an undesirable grassy aroma or a highly desirable disease resistance -- will make breeding for complex traits more efficient. It will also allow breeders to develop varieties with enhanced disease resistance based on multiple resistance genes, which Reisch hopes will satisfy consumers and growers interested in organic or sustainable production.

Martinson's \$2.5 million project will determine how to successfully commercialize new varieties once they leave a breeder's vineyard. His team will be working with a set of extremely cold-hardy wine grape varieties new to both growers and consumers that have spawned new small-winery industries in the upper Midwest and Northeast over the past decade.

"These varieties are unique. Practices that producers use to grow and make Riesling and Merlot won't work for these varieties, due to differences in their genetic background and fruit chemistry," said Martinson. "Producers of less familiar varieties like Marquette, Frontenac and Brianna also face additional challenges in establishing markets to promote and sell these wines. Our goal is to provide

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producers with research-based tools and practices to help them grow, vinify and sell quality wines to local and regional markets."

To address a scope that spans vineyards, wineries and tasting rooms, the project will rely on the expertise of 34 researchers representing 13 institutions from South Dakota to Vermont, including a Cornell enologist, viticulturist and economist.

Martinson hopes that by working as a team, they will be able to offer integrated, relevant information that would not be possible if the states worked independently. Ultimately, he hopes the project will help convert startup wineries into sustainably profitable enterprises that can fuel rural economic development.

"For Cornell faculty members to be successful lead PIs on two highly competitive SCRI grants signifies the outstanding quality of grape program at Cornell," said Tom Burr, director of the New York State Agricultural Experiment Station in Geneva. "These projects will reap huge benefits for the New York and national grape industries."

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