Melon research sweetened with DNA sequence

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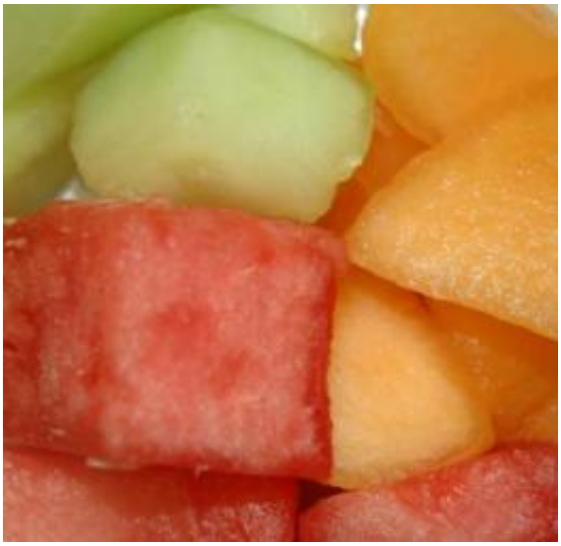

Colored melon flesh are full of nutrients. Plant breeders may develop even better varieties now that melon genome with hundreds of DNA markers has been mapped. Credit: Texas AgriLife Photo by Kathleen Phillips

People smell them, thump them and eyeball their shape. But ultimately, it's sweetness and a sense of healthy eating that lands a melon in a shopper's cart.

Plant breeders now have a better chance to pinpoint such traits for new varieties, because the melon genome with hundreds of DNA markers has been mapped by scientists with Texas AgriLife Research. That means tastier and healthier melons are likely for future summer picnics.

"This will help us anchor down some of the desirable genes to develop better melon varieties," said Dr. Kevin Crosby, who completed the study with Drs. Soon O. Park and Hye Hwang. "We can identify specific genes for higher sugar content, disease resistance and even drought tolerance."

The results are reported in the *Journal of the American Society of Horticultural Sciences*.

Melons are fleshy, edible cucurbits grown worldwide in a multitude of varieties. Not only are they economically important, the scientists noted, but they are a favorite among consumers internationally.

Melons -- they come in all sizes, shapes and colors. People around the world love them. Researchers at Texas AgriLife Research have mapped the melon genome with hundreds of DNA markers. Credit: Texas AgriLife Photo by Kathleen Phillips

The average person in the U.S. eats about 25 pounds of melon every year, according to the Agricultural Marketing Resource Center at Iowa State University.

Scientists from France and Spain already had completed partial maps of

segments of the melon DNA sequence. The Texas researchers connected those segments with new findings in their study to complete the entire melon genome map.

For the study, the Deltex ananas melon was crossed with a wild melon called TGR 1551. More than 100 of the offspring from that cross were grown in the AgriLife Research greenhouses at Weslaco, Crosby noted.

DNA was extracted from leaf tissue collected 21 days after planting. Results from these tests were integrated into partial maps created by other researchers.

Previous knowledge of melon DNA was like two sets of directions - one from Miami to Houston and the other from El Paso to Los Angeles. That would make one wonder how to get from Houston to El Paso. The study by Crosby's group, in essence, devised the path from Miami to LA and all points between.

In addition to the complete map, the researchers located genetic markers linked to fruit sugars, ascorbic acid (vitamin C) and male sterility, which is useful for developing hybrid varieties.

The trio said the genetic map will be helpful for future studies in identifying fruit sweetness, quality, size, shape and resistance to disease.

Source: Texas A&M AgriLife Communications

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