

Researchers find genes that 'tune' flower fragrances

February 9 2010, by Stu Hutson

(PhysOrg.com) -- Shakespeare famously wrote, "That which we call a rose by any other name would smell as sweet." With all due respect to the Bard, University of Florida researchers may have to disagree: no matter what you call a flower, its scent can be changed.

A team at UF's Institute of Food and [Agricultural Sciences](#) has uncovered some of the genes that control the complex mixture of chemicals that comprise a flower's [scent](#), opening new ways of "turning up" and "tuning" a flower's aromatic compounds to produce desired fragrances.

"For a long time, breeders have mostly focused on how [flowers](#) look, their size, color and how long blooms last," said David Clark, a professor of environmental horticulture. "But scent has gotten left behind. Go to a florist and try to smell the flowers. You probably won't get what you expect."

Over the years, Clark says, breeders have selected flowering plants that produce bigger, more attractive flowers with long vase lives; but in doing so, they may have been inadvertently selecting plants that were willing to devote less to producing [fragrance](#).

That may change. For example, a customer may someday be able to walk into a florist and select from scented or unscented varieties of the same flower.

In work published in the January issue of *The Plant Journal* and the

February issue of *Phytochemistry*, the researchers describe how various genes in petunias help regulate the amount of the 13 major aromatic compounds in that flower's fragrance.

The work will help researchers control the levels of these compounds, adjusting a flower's fragrance while also producing more or less of it.

In the papers, the researchers also describe some of the more fundamental aspects of how flowers produce scent. For example, they observed that the scents are largely manufactured in the petunia flower's petals, and that scent production is activated when the flower opens.

The studies are part of an ongoing effort to isolate the [chain reaction](#) responsible for producing scent, so that fragrances can be modified without interfering with other flower qualities, said Thomas Colquhoun, a UF environmental horticulture researcher and first author on both papers.

For more than a decade, Clark and his colleagues have combed through more than 8,000 petunia [genes](#). The search has yielded some interesting finds.

For example, the gene that produces the compound that gives rose oil its distinctive scent also makes tomatoes taste good.

By manipulating this gene, UF researchers led by horticulture professor Harry Klee have been able to create tomatoes with more flavor. Klee, Clark and colleagues are now working with plant breeders and taste specialists to prepare the tomato for the marketplace. Better smelling roses are also in the pipeline.

“The taste of food, the smell of a flower — these are things that enrich our lives in ways we don't fully understand yet,” Clark said. “Learning how plants interact with us and their environment brings us closer to

truly appreciating what the natural world has to offer.”

Provided by University of Florida

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