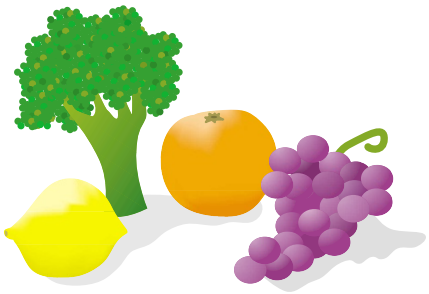
Fruit genome projects ripen on the vine

Now that scientists have finished farming the human genome, they are turning far afield for new ventures. Several genome projects that will begin this year are quite literally rooted in the field: grapevines, citrus and peach trees, and even the humdrum broccoli.

The grape is one of the most economically important fruit crops in the world, and yet the biology of grapevines is relatively unknown, says Australian researcher Mark Thomas, who chairs the International Grape Genome Project. The group has recently released a white paper outlining research goals and is seeking scientists to join the project. Sequencing the grape genome could improve crop yield, fruit and wine quality, and resistance to pests and diseases.

Plant genome research is expected to get a boost when the US National Plant Genome Initiative releases its five-year plan for 2003–2008. The plan calls for detailed genetic analysis of "key plant species," which officials have thus far declined to name.

Some genome projects that appear ready to bear fruit include the peach tree, viewed as the best candidate for deep genetic sequencing. The peach, which has a relatively small genome, could serve as a model for a wide range of trees, says Mikeal L. Roose of the University of California-Riverside. "We don't have a good model for fruit trees, and the peach is related to almost all the important fruit and nut trees," he says.



Kimberly Homer

Citrus researchers, meanwhile, are juiced up about a proposal to establish an international citrus genome steering committee. Spanish researcher Vicente Conejero has offered to host a meeting to prioritize genome projects of interest to citrus researchers and discuss an open-access collaborative citrus genome database.

Brassica, a family of plants including broccoli and cabbage, is the subject of another international project. The plants may offer insight into polyploidy, one of the stranger genetic characteristics of plants—and one that can make plant genomes hard to study, says Ian Bancroft of the John Innes Center in Norfolk, UK.

Several of the schemes were announced in January at the eleventh annual Plant and Animal Genomes Conference in San Diego. The meeting allows agricultural researchers to be exposed to a wide variety of work in other species, says meeting organizer Stephen R. Heller. "You might call it a place where a lot of cross-pollinating occurs."

Some researchers argue that comparing one plant's sequence to a model genome hastens analysis of specific genes. But because there is significant genetic diversity, others question whether model plants will have much value.

Many plant genome researchers also say finding funding for genome projects can be difficult. "Agricultural genomics is the Rodney Dangerfield field of science," says Heller. "It gets no respect." The US National Science Foundation is investing $50 to $60 million in plant genome research, he says. "But that money represents just a day of work on the human genome project."

Damaris Christensen, San Diego

UK to regulate 'serious' genetic tests

Direct-to-consumer marketing of genetic testing services in the UK is likely to be strictly regulated under new proposals by the government-appointed Human Genetics Commission (HGC).

The commission wants a statutory regulation scheme modeled on one currently in use for medicines, where products have to be granted Department of Health clearance before they are launched. The department will also specify whether tests can be marketed over the counter, under pharmacists' supervision, or only with a doctor's prescription.

The UK does not currently have statutory control over suppliers of direct-to-consumer genetic testing services, only a voluntary compliance agreement dating back to 1997. HGC began re-examining the issue in 2002 when a company called Sciona announced its intention to market tests for lifestyle and dietary issues such as alcohol and vitamin intake—something the existing guidelines did not cover.

Last November, HGC indicated it still favored a non-statutory system of self-regulation by suppliers. But at a public meeting on 5 February 2003, chairman Helena Kennedy said subsequent public consultation had shown that most people wanted genetic testing to be delivered through the National Health Service (NHS), at least for tests related to serious diseases. As a result, she said, the commission was now convinced it needed statutory controls instead of a "free-for-all."

"We have moved away from a libertarian position," she said. "We now believe testing with a serious implication for your health should go through a medical practitioner."

Details of which tests would be designated prescription-only would be left to the Medicines and Healthcare Products Regulatory Agency, said Philip Webb, chairman of the HGC's working group on direct genetic testing. Webb expects that the prescription-only category would apply to "more serious" tests, such as those for the Huntington chorea gene. "Others, like paternity testing or genealogy testing, could be available through less regulated sources," he said.

Not all HGC members are enthusiastic about the proposed regulations, however. Several expressed concerns that limited NHS budgets and staff shortages would remove patients' access to prescription-only genetic tests.

"We know that the prescription-only classification is used by the NHS as a way of rationing, and sometimes entirely to prevent access to drugs," said member John Burn, professor of genetics at Newcastle University. "This places huge emphasis on the amount of resources to be given to testing." Without adequate NHS resources, he said, patients would be more likely to turn to cheap Internet sources for their tests.

One of the leading independent pressure groups in the field, Human Genetics Alert, criticized the commission as "weak" and "failing in its duty to protect the public."

Demanding a ban on over-the-counter marketing of all genetic tests, the organization's director, David King, claimed HGC had "ignored mounting evidence in Britain and the United States of the harm that can arise from the exploitative marketing of scientifically unvalidated and unethical tests."

Peter Mitchell, London