Science & technology | Brazilian science

Fruits of co-operation

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SAMBA, football and...genomics. The list of things for which Brazil is renowned has suddenly got longer. Only a few days after publishing, on July 13th, the first-ever sequence of the genome of a plant pathogen, scientists at Sao Paulo's state research agency, Fapesp, were due to announce, on July 21st, another success—the composition of 279,000 human expressed-sequence tags, small pieces of DNA that allow genes to be located along chromosomes. Only in America and Britain have more than that number of human ESTs been identified.

Though they are of global significance, both of these advances are also of particular interest to Brazilians. A number of the ESTs in question are derived from genes linked to cancer of the head and neck, which for some reason is unusually common in Brazil. And the plant pathogen sequenced, *Xylella fastidiosa*, is an insect-borne bacterium that has been ravaging Brazil's orange groves, causing their trees to produce shrivelled fruit and costing growers an estimated $100m a year.

As if sequencing *X. fastidiosa* were not enough of an achievement in itself, the project was finished two months ahead of schedule and $2m under its original $15m budget, even though it involved co-ordinating a "virtual institute" made up of 35 laboratories scattered across the state. The man who did that co-ordinating,

Andrew Simpson, says there were two reasons for arranging things this way. The alternative, building a giant, bricks-and-mortar institute would have been costly and time-consuming. And dividing the work between many laboratories maximised the sharing of know-how among Sao Paulo's scientists.

This sudden leap in scientific expertise has had a long run-up. Ever since the 1960s, Fapesp has been guaranteed, by law, a fixed share of all the tax collected in Sao Paulo (first 0.5%, later 1%) and independence from the political meddling that is endemic in Brazilian public institutions. And whereas other states' research agencies have such guarantees routinely ignored, Fapesp's growing prestige over the years has made

the state's laboratories were ready to jump into a huge project and sequence a complete organism.

The success of the *X. fastidiosa* project seems to be breeding more success—and more money. The Brazilian citrus growers' association, which helped to finance the project, is now offering to pay to decode the bug that causes another serious disease, citrus canker. The Ludwig Institute, in Switzerland, is contributing half of the $10m cost of the team's human-cancer project. Brazilian sugar growers are helping to finance another new project, to sequence the genome of sugar cane. And the American Department of Agriculture is to pay for a team to sequence a strain of *X. fastidiosa* that causes Pierce's disease in grapevines, which is currently afflicting California's vineyards.

The lesson of all this is that there is no reason why countries such as Brazil cannot compete in leading-edge science if they put their minds to it. Brazil's share of the scientific papers published in international journals has risen from 0.4% to 1.2% over the past 15 years. With its largest state having now demonstrated the benefits of co-operation and a secure source of financing, and with more than 200 young geneticists trained as a result of the *X. fastidiosa* project alone, that share may well go on rising.

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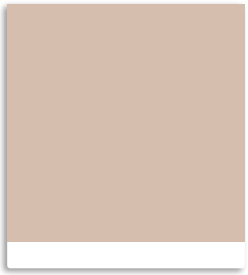

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