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Biotechnology

The triumph of the commons

Feb 10th 2005

From The Economist print edition

Can open source revolutionise biotech?

THE computing industry has been transformed by open-source software, threatening business models while creating lucrative opportunities for some firms. Might the same happen in biotechnology? In a paper published in *Nature* on February 10th, a group of researchers describe a way to transfer genes into plants that bypasses the now most commonly used technique, agrobacterium transformation, which is protected by hundreds of patents. The new process may provide an alternative method of modifying certain types of crops in order to, say, improve harvests. But what makes the invention particularly notable is that the authors, affiliated with CAMBIA, a non-profit biotech research group in Australia, have made the procedure free for use under a novel "open-source" licence.

This licence allows people to commercialise products based on the procedure. All that is required is that improvements to the technique itself be shared, to the benefit of all users. This should make it easier for companies and researchers in poor countries to use agricultural gene-transfer technology, which today's patent-licensing approach impedes.

"The idea is to try to craft a system so that we have a different way to do business," says Richard Jefferson, the head of CAMBIA and a co-author of the paper. "This is a demonstration of a way forward for an innovation business model," he says, which could help unleash creativity in poorer countries. This week, the group also unveiled a website, BioForge.net, to help biotech researchers to collaborate, much as SourceForge.net is a nexus for open-source software development.

Although open-source approaches have already been used in biotech-related computing (called bioinformatics) and database sharing, CAMBIA's licence represents an actual technique being provided in an open-source form. It is part of a broader push towards open practices in the life sciences. For example, Science Commons, an offshoot of Creative Commons (which provides less restrictive copyright licences to authors), is preparing to develop open licences later this year.

CAMBIA's technique, and its open-source licence, "is a potentially huge deal for people working in minor crops, on humanitarian projects, and even for smaller companies working with the major crops," says Lisa Lorenzen of Iowa State University. Calestous Juma of Harvard University's Kennedy School of Government believes the approach is viable because "you have the incentive to invent, but you also have the raw materials—information—with which to invent."

The dominant patent holder in agrobacterium transformation, the most widely-used means of plant gene-transfer, is Monsanto, a big agricultural firm. The firm says that, although it is not very familiar with open-source approaches in the life sciences, the technology seems to complement, not

threaten, its business model.

In information technology, some firms, including mighty Microsoft, are severely threatened by open source. Yet other firms, including big ones such as IBM, have evolved business models to embrace open source, which contributes greatly to their revenues. The question is, can open-source biotech also find its way into drug development, where the costs are higher and potential profits greater?

Pedants will note that CAMBIA's approach is not pure open source, since the group relied on grants from foundations to develop the technology rather than on volunteers. Moreover, the licence itself is not completely unique, in that royalty-free, non-exclusive technology agreements that stipulate sharing improvements have existed before. But these are quibbles. The open-source-like approach may not revolutionise the biotech industry, but it is a notable step in a new direction.