

Nonprofit institutions form intellectual-property resource for agriculture

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Current practices in patenting and intellectual property (IP) protection have created barriers to the use of biotechnology and advanced agricultural technologies for the creation and commercialization of new crop varieties. The complex and cumulative nature of biological innovation requires access to multiple technologies that are often exclusively owned or licensed. For example, commercializing a single variety of transgenic tomato could involve obtaining the rights to use a variety of technologies and genes from numerous life-sciences companies, government agencies and universities.

Obtaining “freedom to operate” (FTO: the ability to clear all IP barriers and bring a product to market) for transgenic crop varieties is difficult. There is considerable uncertainty as to who holds what rights to particular technologies, and negotiating access to those rights is time-consuming and costly. This is a problem for the major international agricultural companies that focus primarily on high-volume crops such as corn, soybeans and cotton; for research institutions that work on specialty crops grown on much smaller acreages, such as tomatoes, strawberries, apples and cabbage; and for public institutions that work on staple crops for humanitarian use in developing countries.

The international agricultural companies have taken steps to solve their FTO problems through mergers and cross-licensing agreements that bring together essential IP components within one company. However, public-sector institutions — such as universities, government agencies, international agricultural research centers and others working on specialty and staple crops — are still struggling to find ways to gain FTO. In addition, donor agencies such as the Rockefeller and McKnight foundations, which have a long history of investing in agricultural research that benefits subsistence farmers in developing countries, have also found that IP constraints are reducing the flow of technology.

Public resource for ag

Universities and other nonprofit institutions have generated many key patents related to agricultural biotechnology and they will most likely remain an important source of innovation. However, no single institution has the complete package of technologies required for commercialization of a biotech variety. Although some institutions are developing ways to deal with these problems, there are still many examples of public-sector inventions that have been licensed exclusively to private-sector partners. In late 2002, representatives of more than a dozen U.S. public-sector agricultural research institutions (including UC) joined with the U.S. Department of Agriculture and the Rockefeller and McKnight Foundations to discuss access to patented agricultural technologies for the development and distribution of improved specialty crops and those targeted for the developing world.

The participating institutions are pursuing an initiative called the Public Intellectual Property Resource for Agriculture (PIPRA), which will explore the following collaborative IP management strategies:

- Developing licensing strategies that retain specific rights for humanitarian and specialty crops while allowing and encouraging licensing of such technologies to the private sector.
- Developing and maintaining a database of public-sector IP assets that includes information on IP licensing status and technologies that are in the public domain.
- Creating technology “packages” that would provide both FTO and the material resources (such as vectors, promoters, trait genes) required for specialty or humanitarian applications.

At present, PIPRA focuses only on IP generated by them, whereas

another new entity called the African Agricultural Technology Foundation is dealing with access to private-sector technologies for targeted crop applications in sub-Saharan Africa (www.afttechfound.org). Other issues that limit the commercialization of genetically engineered crop varieties — such as public acceptance and high costs for regulatory approval — must be addressed by other initiatives.

Next steps

PIPRA is moving forward with a process that will forge collective action in technology management among a significant number of nonprofit institutions active in agricultural biotechnology research. This initiative is intended to be widely inclusive; at present about 25 major institutions are involved and more are being sought. UC Davis professor Alan Bennett was recently selected as PIPRA’s executive director, and its offices will be based

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on campus. PIPRA intends to move forward in a cooperative manner and craft solutions to problems that arise. To this end, activities are under way that will answer important questions about the types of collaboration needed, including developing case studies, assembling a database, involving additional public-sector institutions, and engaging private-sector and other key stakeholders. The group is stimulating broad discussion to help uncover the implications of new IP management strategies, and to identify critical issues that must be addressed to make this initiative successful.

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