

Workshop Recommendations

Participants in the three workshops, which are the heart of the NABC meetings, formulated recommendations for policymakers, participants and readers *on research policy issues, competing rights, and the role of governments and public institutions* related to gene discovery, ownership and access. The participants also considered how genetic discoveries should be exploited to maximize the public good and benefit society. Plant, animal and microbial aspects of agricultural biotechnology were considered from national-international, developed-developing countries, and public-private perspectives.

Research Policy

(See page 29 for the complete report.)

University Agenda-Setting

- *NABC should convene a forum to establish the public research agenda for agricultural biotechnology and identify high priority research tasks requiring attention.*
- *NABC should compile a repository of biotechnology experts and serve as a referral agency to outside organizations.*
- *NABC should survey its membership on the relative mix of industry- and public sector-sponsored biotechnology research at land-grant universities to provide baseline data to help inform the debate.*

Research Exemption

- *NABC should undertake an educational program aimed at clarification of the experimental use exemption in patent law.*
- *Universities and government agencies should be granted a research exemption as not-for-profit organizations in order to allow such groups to use patented technology in research for noncommercial purposes. A possible mechanism for such an arrangement would be the granting of a royalty free license to use patented inventions.*

Patent Scope

- *NABC should lead a public discussion on patent scope, recommend reasonable limits, and build consensus that patents should be narrow in scope.*
- *Strong utility requirements must be achieved before patents are granted.*

North-South Relations

- *NABC should compile and synthesize the experiences, good and bad, of NABC members on exchanges of information and germplasm between universities in developed countries and universities in underdeveloped*

countries. Based on this information, NABC should develop a position paper on the principles and procedures of fair exchange.

- NABC, in partnership with farmers and all others involved in producing and utilizing agricultural products, processes and information, should find ways to fairly and equitably recognize contributions of land races and indigenous plant populations and knowledge. Such ways may include educational programs and pamphlets.

Competing Rights

(See page 37 for the complete report.)

- *There is a need to manage the basic gene pool for the common good. There has to be cooperation between the private sector and the public sector to work for the common good. Therefore it is the recommendation of this workshop that the public sector increase efforts to determine and set long term policy with broad constituency involvement, e.g., farmers, local government, universities, consumer groups, NGO's and industry. The private sector should develop products in an environment compatible with genetic preservation and access.*
- *There should be formal recognition by potential users of biological resources of rights to control over and compensation for use of biological resources not only by individuals and nation states but also by local communities, cultural groups and regional groups.*
- *At forums such as the Fourth International Technical Conference on Plant Genetic Resources in Germany in 1996, and at the next meeting of the Conference of Parties to the Convention on Biological Diversity, November, 1995, in Indonesia, there should be encouragement of equitable and enduring agreement among those with rights in biological resources and between those with rights and potential users, which should include education of all parties on fundamental issues and long-term funding of biodiversity conservation.*
- *NABC meetings should be organized to provide more background information and direction to participants, including availability of expertise in legal, social and biotechnology issues; and should actively recruit participation of a broader range of views. This improvement should lead to more useful recommendations.*
- *NABC member institutions should establish outreach programs on biotechnology and associated intellectual property issues.*
- *Clarify the "research exemption" for utility patents for use by public research institutions.*
 - a. Gene sequence information (all uses),*
 - b. Process information (e.g., the enzyme Taq polymerase as a tool for research),*

Specifically:

- c. A specific plan for action proposed by one participant, but not presented here as a consensus of the workshop was: Universities should challenge the ability of patent holders to restrict research at universities (using patented technology), and*
- d. If the challenge is unsuccessful, they should lobby Congress to change the law to allow such research.*

Role of Governments and Public Institutions

(See page 43 for the full workshop report.)

Need for Biotechnology Education

Access

- Each school or college of agriculture should identify biotechnology specialists who can be contacted by field/county extension staff for information, program development and program delivery.*
- NABC should work with extension leadership to include biotechnology awareness and education in extension education programs.*
- NABC should identify and encourage development of needed educational materials (e.g., brochures, e-mail bulletin boards, videotapes, etc.).*
- NABC should encourage testing and evaluation of commercial biotechnology materials and products, including cost-benefit analysis, in public sector institutions.*
- NABC should encourage input from user advisory groups to assist in setting applied biotechnology research priorities.*

Public Awareness

Undergraduate education

- NABC should encourage incorporation of ability to understand and interpret biotechnology in undergraduate "core" curricula, with special attention to risk assessment, technical, ethical and socioeconomic issues.*

K-12

- NABC should publish a list of educational materials on biotechnology.*
- NABC should encourage state and local teacher groups to hold workshops on biotechnology.*
- NABC should develop youth education programs, using programs such as 4-H as a means of biotechnology education.*
- NABC should work with vocational agriculture teachers and support efforts to incorporate biotechnology training in vocational agriculture curricula.*

Opinion leaders/public

- *Scientists should appreciate the importance of and receive training in media relations.*
- *NABC should encourage TV programming (Discovery, NOVA, etc.) and other forms of mass media-based education to provide information to the public on biotechnology.*
- *Through its member institutions, NABC should encourage workshops, conferences and other public forums designed to include the broadest range possible of constituent groups in an on-going dialogue on biotechnology issues.*

General

- *NABC should involve educators in programs such as this meeting and provide specific, more targeted workshops for teachers to develop educational materials.*

Intellectual Property Rights

- *Graduate and undergraduate curricula should include specific training in intellectual property rights and issues.*
- *NABC institutions should develop a clear policy describing the rights and responsibilities of graduate students regarding intellectual property rights.*
- *NABC should act as a catalyst to develop a curriculum addressing intellectual property rights and ethical issues.*
- *NABC should act as a clearinghouse for educational programs and institutional policies on intellectual property rights.*

Access to Intellectual Property from Genome Analysis and other Aspects of Agricultural Biotechnology

- *Policy for release of intellectual property by public institutions should be based on a mandate to promote the public good rather than motivation to increase institutional financial resources.*
- *Public advisory groups should have input into setting policy for release of intellectual property by public institutions.*
- *Public policy should be devised to maintain broad access to tools of biotechnology (germplasm, genes, methods) developed at public institutions.*
- *Public law should provide a more liberal research exemption on patented intellectual property.*
- *The courts should apply anti-trust laws to ensure competition in the biotechnology industry.*
- *The term of ownership of patented intellectual property should be re-examined with the goal of balancing economic returns to investment versus opening the knowledge for future productivity and innovation.*

- *While there was not unanimous support for this recommendation, many work-shop participants felt that the Patent and Trademark Office should issue utility patents only on the final product (plant genotype), rather than individual components or processes (e.g., genes or transformation methods).*

Need to Identify and Involve Stakeholders in Defining the Public Good

- *NABC, in collaboration with land-grant and other universities, and organizations such as CAST, should sponsor a national panel of stakeholders in agricultural biotechnology (farmers, consumers, environmental groups, government, seed trade associations, etc.) to define the "public good"; assess the effects of intellectual property rights on technology transfer and utilization; and issue a report.*
- *NABC should encourage greater participation of legislators and other government officials in NABC annual meetings.*
- *For public input to have impact, the public institutions should seriously listen to comments and be held accountable to public advisory groups.*
- *Appropriate research roles for the government and public institutions include enhancing the use of biotechnology in minor crops to promote diversification for family farmers, promoting new and innovative uses of agricultural commodities through biotechnology, and promoting environmental responsibility in the use of agricultural biotechnology products. These roles can be implemented only if public funding for agricultural biotechnology research is increased.*

Research Incentives

- *There should be motivation provided for fundamental and applied research, for commercialization of results from research and for exchange of information with other researchers, teachers and extension faculty.*

Reinvestment of Profits from Publicly Funded Research

- *Distribution of royalties and license fees from publicly funded research should be returned to the institution/unit that developed the intellectual property, to be reinvested in research.*

Research Regulation and Safety

- *Products posing different levels of risk should be treated with different levels of stringency in oversight. Care in regulation is of special concern regarding environmental release of genetically modified organisms with the ability to propagate in the wild.*