NABC news

Spring 2003 no. 26

Providing an open forum for exploring issues in agricultural biotechnology

NABC'S PRINCIPAL OBJECTIVES ARE TO:

* *provide an open forum for persons with different interests and concerns to come together to speak, to listen, to learn, and to participate in meaningful dialogue and evaluation of the potential impacts of agricultural biotechnology*
* *define issues and public policy options related to biotechnology in the food, agricultural, biobased industrial product, and environmental areas*
* *promote increased understanding of the scientific, economic, legislative, and social issues associated with agricultural biotechnology by compiling and disseminating information to interested people*
* *facilitate active communication among researchers, administrators, policymakers, practitioners, and other concerned people to ensure that all viewpoints contribute to the safe, efficacious, and equitable development of biotechnology for the benefit of society*
* *sponsor meetings and workshops and publish and distribute reports that provide a foundation for addressing issues.*

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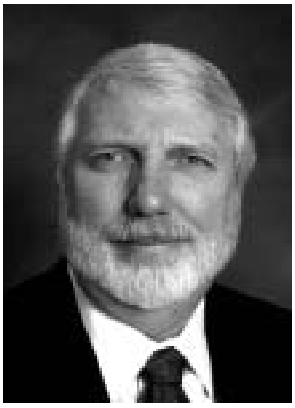
Letter from the Chair . . .



Neal K. Van Alfen
NABC Chair, 2002—2003

Why is biotechnology, in broad terms, considered by most of the world in such a favorable light, but agricultural biotechnology with such distrust? I have heard most of the arguments attributing this difference to unfortunate incidents in Europe that resulted in distrust of government oversight of the food-supply chain. This must certainly be part of the reason for the difference in attitudes between the United States and Europe, but it probably doesn't explain everything. In this country most people have had a cautious, but not negative, response to agricultural biotechnology. Initial concerns about adverse health effects for those who eat foods derived from recombinant-DNA technology have essentially dropped from view because of the total lack of any credible reports of problems associated with consumption of these foods. This body of experience has reinforced the cautious, but not negative, attitude of our consumers. Our regulatory system seems to be working well. It is, therefore, especially important that this attitude of acceptance not be compromised for short-term goals.

For many years now, I have been puzzled by the broad acceptance of medical biotechnology. Health-service consumers are not only accepting of the latest technology being used to address their medical ills, but anxiously await the development of anything that will prolong the quality of their lives. Human gene therapy is not viewed as a "killer tomato" and no fear-inducing terms like "frankenfood" have been coined, even though the derivation of this word more closely describes what is happening today in medical biotechnology than it does anything associated with agricultural biotechnology.

Medical biotechnology, in many ways, is much more controversial than is agricultural biotechnology. Nothing in agricultural biotechnology has received attention equivalent to the stem-cell debate. The issue of human cloning has also been on the front pages of newspapers and has commanded much air time recently, even though everyone assumes that the claims of successful human cloning must be false. The public, and thus politicians, are interested and actively engaged in discussion of medical biotechnology advances. This interest and attention have clearly been beneficial to the funding of biomedical research.

Medical biotechnology research is conducted in a climate in which there is considerable public oversight and where many limits are imposed. Agricultural researchers are not used to this type of oversight, and we

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NABC 15: *Biotechnology: Science and Society at a Crossroad*

June 1–3, 2003, Seattle, WA

Michael Burke
Oregon State University
Corvallis, OR

Eugene Rosa & Sandra Ristow
Washington State University
Pullman, WA

The 2003 annual meeting—*Biotechnology: Science and Society at a Crossroad*—will highlight not only the intersection of scientific advances with societal choices, but also the historical recurrence of this intersection. Advances in genetic manipulation of plants, animals and microorganisms are opening avenues of discovery of unprecedented potential. However, historically, periods of revolutionary change have stirred resistance and motivated opposition. Applications of biotechnology to agriculture, resulting in genetically modified (GM) crops and foods containing GM ingredients, have not only spawned scientific debate but also public resistance and open opposition. Not all scientists agree that benefits from these altered organisms outweigh perceived risks to human health and to the environment, and attentive members of the public have similar concerns. This is not the first time that rapid advances in science and the results of scientific experimentation have generated controversy: an historical theme is repeating itself!

One of the earliest such crossroads occurred in the fifteenth and sixteenth centuries when scientific discovery was at odds with the prevailing belief system. Well documented are the arguments by the established Church against the works of Nicolaus Copernicus (1473–1543) and Galileo Galilei (1564–1642) who postulated a heliocentric rather than geocentric astronomical system. In those early times, the crossroad was clearly set between the proponents of scientific theory and established societal beliefs. In the nineteenth century, the theory of evolution promulgated by Charles Darwin (1809–1882) once again placed science and the Church at a crossroad—a crossroad that, to this day, remains a challenge to the religious beliefs of many.

So, with a long historical lens, present-day controversy over GM crops and foods may be seen as an extension of a timeworn process of scientific controversy. With a shorter historical lens, it may be seen as the aftermath of societal concerns over the fluoridation of water, over nuclear power and the generation of radioactive waste, over the irradiation of foods, and as the consequence of a growing mistrust of scientists, of government, and of corporate agriculture. Unlike earlier crossroads, those opposing agricultural and other applications of biotechnology are not necessarily closely associated with an established church or government. Their concerns are wide-ranging and their objections are often strongly held. Problems associated with the applications of biotechnology range from gene pollution of important food crops and livestock to concerns over ownership of genes, industrialization of the food system, corporate control of agriculture, and the demise of the family farm and of local food systems.

Some attempts have been made to elicit dialogue between the pro-biotechnology—and largely scientific—community and a broad range of stakeholders concerned about its applications to agriculture. NABC's fifteenth meeting will be a further step fostering such dialogue.

We will begin with keynote addresses focusing on societal concerns over the applications of biotechnology: the benefits from, and challenges to, biotechnology will be set out by social scientist Larry Busch (Michigan State University) and plant biologist James Cook (Washington State University), respectively. Their presentations will be followed by a session on sustainable agriculture. Fred Kirschenmann (Leopold Center at Iowa State University) will address sustainability without biotechnology and John Anderson (Monsanto) will present the contrasting view of sustainability with biotechnology. Kay Walker Simmons (USDA Agricultural Research Service) will outline the scientific basis of concerns over the use of biotechnology. Economists Nicholas Kalaitzandonakes (University of Missouri), Jill McCluskey (Washington State University) and Peter Phillips (University of Saskatchewan) will address the effects of human-health concerns, consumer perceptions and resistance, and labeling and traceability issues on national and international trade and marketing.

NABC 15 will feature special sessions describing biotechnological applications that have been successful, that have failed, or that have led to new cooperative endeavors. Dennis Gonsalves (USDA-ARS, Hawaii) will describe the development of GM

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Keynote Speakers

Lawrence Busch

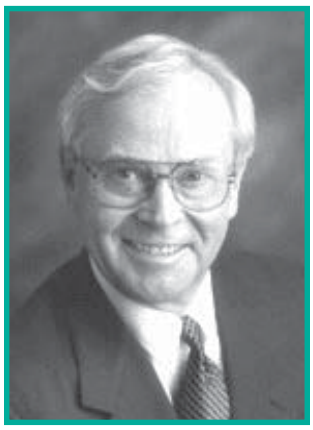
Lawrence Busch is distinguished professor of sociology, director of the Institute for Food and Agricultural Standards, and director of the Partnerships for Food Industry Development–Fruits and Vegetables project at Michigan State University.

He is coauthor/coeditor of a number of books including *Plants, Power, and Profit: Social, Economic, and Ethical Consequences of the New Biotechnologies* (Blackwell, 1991), *From Columbus to Conagra: The Globalization of Agriculture* (Kansas, 1994), *Making Nature, Shaping Culture: Plant Biodiversity in Global Context* (Nebraska, 1995), and, most recently, *The Eclipse of Morality: Science, State, and Market* (Aldine deGruyter, 2000) as well as more than 100 other publications.

Dr. Busch is past president of the Rural Sociological Society, past president of the Agriculture, Food, and Human Values Society and a fellow of the American Association for the Advancement of Science. He recently was named Chevalier de l'Ordre du Mérite Agricole by the French government.

He has worked in France, Norway, Kenya, Brazil, India, and a number of other nations on issues related to food and agriculture. He has long been a consultant to the International Service for National Agricultural Research and the Food and Agriculture Organization of the United Nations. He has written and spoken on a variety of social, political, and economic issues associated with food standards, both here and abroad.

His interests include food and agricultural standards, food safety policy, biotechnology policy, agricultural science and technology policy, higher education in agriculture, and public participation in the policy process.



R. James Cook

R. James Cook has held the Endowed Chair in Wheat Research at WSU, Pullman, since April, 1998. He was a research plant pathologist with the USDA-Agricultural Research Service at Pullman from 1965 through March of 1998, conducting research on biological approaches to control root diseases of Pacific Northwest wheat. He has co-authored two books on biological control of plant pathogens and one book on the health management of wheat.

In 1988, Dr. Cook led the team of researchers at WSU that made the first field test of a genetically modified organism in the Pacific Northwest—a microorganism for control of root disease in wheat.

For the past 10 years he has worked at the interface of science and policy on biotechnology applied to food and agriculture, including: chairing an international working group that produced the 1993 report of l'Organisation Européenne de Coopération Economique (OECE) on *Safety Considerations for Biotechnology: Scale-up of Crop Plants*; coauthoring the white paper *Transgenic Plants and World Agriculture,* released jointly in July, 2000, by the Brazilian, Chinese, Indian, Mexican, Third World, UK and US academies of science; currently serving on the USDA Advisory Committee on Agricultural Biotechnology.

His awards include Superior Service Award, Distinguished Service Award, 1985 ARS Distinguished Scientist of the Year and ARS Science Hall of Fame from the US Department of Agriculture; Fellow, Award of Distinction, and Ruth Allen Award from the American Phytopathological Society; and Fellow of the American Association for the Advancement of Science. He was elected to the National Academy of Sciences in 1993.

Plenary Speakers and Moderators

John R. Anderson, Jr.

John Anderson is a technology development manager with the Monsanto Company where he is responsible for diverse technical projects involving agricultural consultants, farm managers and the academic community. He leads Monsanto's Field Environmental Operations Team, and manages a number of research projects examining economic and environmental impacts of biotechnology. He is also involved in development of business and biotechnology acceptance strategies.

Prior to joining Monsanto in 1998, Dr. Anderson was, for twenty years, a professor of crop science and extension specialist at North Carolina State University, where he was recognized for his expertise in irrigated and no-till corn production, co-leadership of a team of scientists investigating ways to reverse the decline of the bobwhite quail, development of innovative vegetation management strategies for the utility industry, and classroom innovations. In 1991–1992, he served two terms as president of the North Carolina Wildlife Federation. He also served as president of the Wake County Wildlife Club in a year when that organization was recognized as North Carolina's Wildlife Organization of the Year. He was appointed Conservationist-at-Large on the North Carolina Pesticide Advisory Committee for four years.

In addition to BS and MS degrees in soil and crop science, respectively, he holds a PhD in agronomy from the University of Illinois and an MBA from Kenan-Flagler School of Business.

Dennis Gonsalves

Dennis Gonsalves is the new director of the USDA's Agricultural Research Service (ARS) Pacific Basin Agricultural Research Center in Hilo, Hawaii. He maintains an active research program on plant viruses. Recently, as the Liberty Hyde Bailey Professor at Cornell, his research focused on plant virology with the goal of controlling virus disease of fruits and vegetables. He developed and commercialized transgenic papaya that is resistant to the papaya ringspot virus. Two virus resistant varieties, 'Rainbow' and 'Sunup,' were released to growers in Hawaii in 1998. This work helped save the papaya industry in Hawaii and elsewhere, and has drawn the attention of the world media.

Dr. Gonsalves conducts research on the potential risks of transgenic plants under realistic field conditions. His international work focuses on a range of viruses and their impact on grower communities.

Dr. Gonsalves has more than 180 publications and thirteen patents to his credit, having helped educate eighteen graduate students and numerous postdoctoral students from around the world. He is a member of the Society for General Microbiology and the American Phytopathological Society, where he was named a fellow in 1991. In 2002 he received the Alexander von Humboldt Award with Jerry Slightom, Richard Manshardt and Maureen Fitch.

David Hoisington

Nicholas Kalaitzandonakes

David Hoisington is the director of the Applied Biotechnology Center (ABC) and Bioinformatics at the International Maize and Wheat Improvement Center (CIMMYT) located near Mexico City. He established the biotechnology program 13 years ago. Prior, he was an assistant research professor in the Agronomy Department at the University of Missouri.

Dr. Hoisington oversees all of the research activities within the ABC, including major projects focused on sub-Saharan Africa involving the development of national biotechnology capacity, insect-resistant maize that combines conventional and transgenic based mechanisms [*e.g.*, the Insect Resistant Maize for Africa (IRMA) Project] and improving tolerance to abiotic stresses and parasitic weeds.

As director of bioinformatics, he supervises the combined areas of biometrics, information management and information technology (computing and software support services). Major emphasis is focused on developing a crop-information system to manage CIMMYT's breeding, biotechnology and related information on a global basis.

He holds a BS in botany and plant pathology from Colorado State University, Fort Collins, and a PhD in plant biology from Washington University, St. Louis.

Nicholas Kalaitzandonakes is a professor of agribusiness and the director of the Economics and Management of Agrobiotechnology Center (EMAC) at the University of Missouri-Columbia. He teaches management and strategy of innovation and biotechnology.

Over the past five years, Dr. Kalaitzandonakes has authored articles on the economic and environmental impacts of biotechnology; its impacts on the structure of the agrifood supply chain; the economics of identity preservation and traceability; the evolution of the agrifood biotechnology industry; and issues of public acceptance.

He is the editor of *AgBioForum*, and an editorial board member for several other academic journals. As an active consultant and educator, he has worked with US and international public organizations, industry organizations, and agrifood companies on biotechnology strategy.

He received his BS in agricultural economics from the University of Athens and his MS and PhD in agricultural economics from the University of Florida.

For more information on NABC 15:
http://arc.cahe.wsu.edu/nabc/

Frederick L. Kirschenmann

Frederick L. Kirschenmann is director of the Leopold Center for Sustainable Agriculture at Iowa State University. He is one of the founders of the Northern Plains Sustainable Agriculture Society and the international private certification agency, Farm Verified Organic, Inc.

Dr. Kirschenmann came to the Leopold Center from south central North Dakota where he operated and continues to oversee his family's 3,500-acre certified organic farm. Kirschenmann Family Farms has been part of a number of research studies and has been featured in national publications including *National Geographic*, the *Smithsonian*, *Audubon*, *Business Week*, the *Los Angeles Times* and *Gourmet* magazine. In addition to his work at the Leopold Center, he holds an appointment in the ISU Department of Religion and Philosophy.

He has a doctorate in philosophy from the University of Chicago, and has written extensively about ethics and agriculture.

He was named a 2002 Leader of the Year in Agriculture by *Progressive Farmer* publications. His essay, "Scale–Does It Matter?" appeared in *Fatal Harvest: The Tragedy of Industrial Agriculture* (Foundation for Deep Ecology, 2002). He has been a frequent speaker at meetings, encouraging audiences to help shape a new vision for agriculture.

Terri L. Lomax

Terri Lomax is director of the Fundamental Space Biology Division at NASA and professor of botany and plant pathology at Oregon State University. From 2000 until recently, she directed the OSU Program for the Analysis of Biotechnology Issues (PABI), which provides balanced information about genetically engineered crops to the public, press, and policy makers. In addition, she initiated and directed the Science Connections Program (K–12 science outreach for public schools in Portland).

Dr. Lomax's research focus is on how multiple hormones interact to regulate plant growth and responses to the environment. Her group is investigating the mechanism of action of auxin using gravitropic responses of tomato as a model system, and is developing a genomics-based system for assessing and controlling plant growth in space environments.

Her awards include a Fulbright Fellowship at the University of Freiburg, Germany. She was an Aldo Leopold Leadership Program Fellow and is currently a Fellow of the NASA Institute for Advanced Concepts.

She received her BS in botany from the University of Washington (1975), her MS in botany/biology from San Diego State University (1978) and her PhD in biological sciences from Stanford University (1983).

Thomas Lumpkin

Thomas Lumpkin is the director general of the Asian Vegetable Research and Development Center (AVRDC) in Taiwan, the only international center dedicated to vegetable research and development. The Center's mission is to reduce malnutrition and poverty in the world's poorest countries through improved vegetable production and quality. As director general, he makes the final decisions on development and release of transgenic vegetables. Like other international centers, AVRDC is caught between the attractiveness of biotechnology and societal concerns.

Dr. Lumpkin was a faculty member at Washington State University for 20 years, and was chair of the WSU Department of Crop and Soil Sciences and professor of agronomy and Asian studies. Currently, he serves on the International Agronomy Foundation Committee and is a board member of the World Steward Foundation. He also serves on the National Academy of Science Committee on Bioconfinement of Genetically Engineered Organisms, and the Meridian Institute Committee on Protection of IPR for Humanitarian Uses. He is consultant to the American Friends Service Committee and North Korean Academy of Agricultural Sciences on famine relief strategies.

His major research interests lie in East Asian agriculture, particularly in China and Japan.

Jill J. McCluskey

Jill McCluskey is assistant professor of agricultural and resource economics and Food Policy Fellow at the IMPACT Center at WSU.

Dr. McCluskey's research focuses on consumer demand for food quality and information and environmental quality. Her publications, relevant to food labeling, include articles on consumer response and willingness to pay for genetically modified (GM) food, organic foods, labeling policy for GM food products, and protected geographical identification labeling. She has published twenty peer-reviewed journal articles, including a paper forthcoming in the *Review of Economics & Statistics*. She has written consulting reports and provided expert testimony on biotechnology, environmental, and market-structure issues. Recently, she authored an op-ed piece for *Newsday*—reprinted in various newspapers subscribing to the *Washington Post* newswire—on particular food-system trends engendering public distrust.

She teaches undergraduate agricultural marketing and microeconomic theory in the joint PhD program at WSU. She received her PhD in 1998 in agricultural and resource economics from the University of California, Berkeley, with specializations in environmental and resource economics, advanced economic theory, and industrial organization.

Peter W.B. Phillips

Peter Phillips is a professor of agricultural economics and professional associate in management and marketing in a 5-year NSERC/SSHRC Chair in Managing Knowledge-based Agri-food Development at the University of Saskatchewan.

Dr. Philips's research concentrates on issues related to intellectual property rights for agricultural biotechnology and to trade and marketing issues related to GM foods.

His most recent book—*The Biotechnology Revolution in Global Agriculture: Invention, Innovation and Investment in the Canola Sector* (CABI, 2001)—won an award for scholarly writing.

He is director of the University of Saskatchewan College of Biotechnology, a member of the Canadian Biotechnology Advisory Committee and co-chair of the recently completed review of the regulation of GM foods, a senior research associate with the Estey Centre for Trade, Law and Economics, and co-principal investigator for Genome Prairie's $3.3 million, 4-year, Genomics, Ethics, Law and Society Project.

Christopher K. Ngichabe

Christopher Ngichabe is principal research scientist and coordinator of the biotechnology program at the Kenya Agricultural Research Institute (KARI), Nairobi, which encompasses research on crops and livestock. He also coordinates the biotechnology initiative of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) at KARI, and leads projects funded by the US Agency for International Development (AID) on the development and commercialization of transgenic sweet potato, on insect-resistant maize, and on novel disease diagnostics and vaccines for livestock. He is a member of a taskforce formed by Kenya's National Council for Science and Technology to develop national biopolicy.

Since 1998 he has served as principal investigator on a Netherlands-funded research program on contagious pleuropneumonias of cattle and goats, Rift Valley fever (an acute viral disease of several domestic-animal species and humans), Newcastle disease of poultry, and Nairobi sheep disease (a non-contagious tick-borne viral ailment).

He holds a BS degree (veterinary medicine) from the University of Nairobi, an MS (virology) from the University of Reading, UK, and a PhD (molecular virology) from Cornell.

Michael Thorton

Mike Thornton is a plant physiologist working in product development for AMVAC Chemical Company. From 1997 through 2001 he was manager of grower services for NatureMark Potatoes, a division of Monsanto. During this period of time, the acreage of transgenic potatoes in North America increased from less than 10,000 to over 50,000 acres. His focus at NatureMark was to provide overall management of product development for variously transformed potatoes, from early-stage field trials through product commercialization. He worked closely with key influencers in the potato industry (growers, processors, and universities) to document the value of commercial potato varieties that were transformed for resistance to insects and viruses. A large area of responsibility was also to help growers become familiar with the variety-specific pest and cultural management practices needed to ensure success with these products.

Dr. Thornton has over 20 years experience in the potato industry. Prior to joining NatureMark, he held research or extension positions with Colorado State University and the University of Idaho.

He received his bachelor's degree in horticulture in 1980 from Washington State University, his master's degree in 1983 from Colorado State University, and a PhD from the University of Idaho in 1990.

M. Kay Walker Simmons

Kay Walker Simmons is National Program Leader, Grain Crops, for the USDA-ARS. She is co-leader of ARS national programs for Plant Genetic Resources, Genomics, and Genetic Improvement, and Biological and Molecular Processes. These programs include crop biotechnology development, and long-term projects for biotechnology risk assessment and mitigation research. Examples include long-term projects to monitor pest resistance and gene spread, as well as projects to mitigate risk by optimizing management practices.

Dr. Simmons is a member of the USDA Biotechnology Policy Committee and served as ARS representative to the Working Group on the Future of Public Plant Breeding, Secretary's Advisory Committee on Agriculture Biotechnology. She is the ARS Coordinator for the US Wheat and Barley Scab Initiative and Chair (with Mike Burke) of the 2003 Temperature Stress in Plants Gordon Conference.

Prior to joining the USDA-ARS National Program Staff, she was Research Leader of the USDA-ARS Wheat Genetics, Quality, Physiology and Disease Research Unit, at WSU. In 1997 she received the Arthur Flemming Award (Science) for Outstanding Service in the Federal Government. She has a PhD, biochemistry (1974), from UCLA.

Gary H. Toenniessen

Trained as a microbiologist at the University of North Carolina, Gary Toenniessen received a postdoctoral fellowship from the Rockefeller Foundation to conduct research on plant-microbe interactions at the Boyce Thompson Institute for Plant Research. He then joined the Rockefeller Foundation as the program officer responsible for developing and implementing funding programs to help address environmental problems associated with agricultural development. From 1985 to 2000 he had responsibility for the development and implementation of the Foundation's International Program on Rice Biotechnology, a $110 million investment designed to bring the benefits of biotechnology to impoverished rice producers and consumers in developing countries.

Dr. Toennniessen currently leads the Foundation's work aimed at improving food security in Africa. He has (co)authored several articles relevant to these topics including "Plant biotechnology and developing countries," which appeared in *Trends in Biotechnology*, "Feeding the world in the twenty-first century" which appeared in *Nature*, "Advances in plant biotechnology and its adoption in developing countries," in press in *Current Opinion in Plant Biology*, and the book, *Securing the Harvest: Biotechnology, Breeding and Seed Systems for African Crops.*

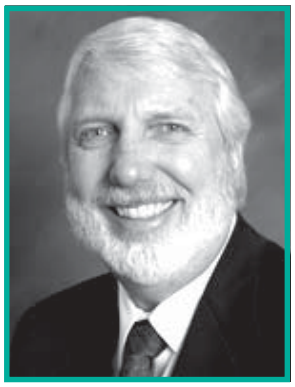
Thomas I. Wahl

Tom Wahl is director of the International Marketing Program for Agricultural Commodities and Trade (IMPACT) Center and an associate professor in the Department of Agricultural and Resource Economics at Washington State University.

His research interests include international marketing and trade as well as food-demand analysis. He has been associated with the IMPACT Center since 1990 with projects focusing on trade policy, food demand in the Pacific Rim and world wheat trade. He has also worked on food trade-related issues for the Asia Pacific Economic Cooperation (APEC) forum and has been instrumental in the development of the concept of an APEC Food System, which was a featured item on the 1999 APEC ministers agenda in New Zealand.

Dr. Wahl, who grew up on a crop and livestock farm in Iowa, received his undergraduate and PhD degrees from Iowa State University. In 1990 he joined the Department of Agricultural Economics at WSU.

As part of his research, he has traveled extensively in the Pacific Rim, particularly in China, and is always looking for potential markets for Pacific Northwest commodities as well as potential alternative crops and products for PNW growers.



Neal K. Van Alfen

Neal Van Alfen received a BS in chemistry and an MS in botany from Brigham Young University. He received a PhD in plant pathology from the University of California, Davis.

Dr. Van Alfen worked as a plant pathology research scientist at the Connecticut Agricultural Experiment Station in New Haven. He was an extension plant pathology specialist and professor of biology and molecular biology and biochemistry at Utah State University. For nearly 10 years, he served as head of the Department of Plant Pathology and Microbiology at Texas A&M University. In 1999, he returned to UC Davis to become dean of the College of Agricultural and Environmental Sciences.

He has extensive experience as a consultant on effects of air pollution on environmental health. His current research interests are in using biotechnology to develop biological control strategies for forest diseases. He has served on numerous national committees and boards, including a number of National Research Council studies on biological control. He currently serves on the editorial boards of professional publications and recently served as president of the American Phytopathological Society. He is an elected fellow of the American Phytopathological Society and the AAAS, and is the 2002–2003 Chair of NABC.

go to our website at
http://www.cals.cornell.edu/extension/nabc

* to download or order our publications
* to see a list o f our member institutions and link to their websites
* to link to the NABC 15 website with updated program and registration information

email: ***nabc@cornell.edu***
Phone: (607)254-4856
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Boyce Thompson Institute,
Room 419
Ithaca, NY 14853

For registration information for NABC 15 go to Page 10

Registration for *Biotechnology: Science and Society at a Crossroad*

The fifteenth annual meeting of the National Agricultural Biotechnology Council will be held in Seattle, WA, at the Westin Hotel, June 1–3, 2003.

Advance registration is strongly recommended. For registration no later than close of business April 18, the fee is $300. Thereafter, it will be $350. The registration fee will cover conference materials, dinner on Sunday evening, continental breakfasts and lunches on Monday and Tuesday, coffee breaks, a copy of *Integrating Agriculture, Medicine and Food for Future Health* (the proceedings volume from the 2002 meeting), and a copy of the proceedings volume from *Biotechnology: Science and Society at a Crossroad*, which is scheduled for publication early in 2004.

Hotel reservations are not covered.

Student Registration

Students who register for the conference may be asked to show student identification at check-in. The early registration fee for students is $100, *i.e.* on or before April 18. The late registration fee for students, *i.e.* after April 18 is $125. The registration fee will cover conference materials, dinner on Sunday evening, continental breakfasts and lunches on Monday and Tuesday, coffee breaks, a copy of *Integrating Agriculture, Medicine and Food for Future Health* (the proceedings volume from the 2002 meeting), and a copy of the proceedings volume from *Biotechnology: Science and Society at a Crossroad*, which is scheduled for publication early in 2004.

Hotel reservations are not covered.

Payment and Billing

Payment options include a check payable to Washington State University; a purchase order from your institution; or credit card charge (VISA, MasterCard). Payment must be in US dollars and must accompany registration, which can be done on the NABC website, http://arc.cahe.wsu.edu/nabc, with a credit-card number or via a downloaded PDF file for mailing or faxing.

Hotel Reservations

Biotechnology: Science and Society at a Crossroad will be held at the Westin Seattle Hotel in downtown Seattle, WA, June 1–3, 2003. A block of rooms at a special rate has been reserved at the Westin for meeting participants. However, your reservation must be received by May 9, 2003, to qualify for the group rate of $169 per night. After that date, reservations will be made according to space and rate availability.

To reserve a room call (888) 627-8513 (toll free US and Canada). You must mention the National Agricultural Biotechnology Council meeting to qualify for the special rate of $169 per single or double room exclusive of applicable taxes. Each person beyond double occupancy will be charged $30 per night. The room fee does not include parking at the Westin, which is $22 self park for hotel guests. Rooms may be secured by faxing the reservation form located at the NABC 15 website, http://arc.cahe.wsu.edu/nabc, to (206) 727-5896, or the reservation form may be mailed to:

The Westin, Seattle
Attn: Reservations
1900 Fifth Avenue
Seattle, WA 98101-1281

Cancellations must be received 72 hours in advance for a full refund (www.westin.com/seattle).

Travel

Fly into the Seattle-Tacoma airport. The Gray Line shuttle ($8.50 one way, $14.00 round trip) stops at the airport every 10 and 40 minutes after the hour, and at the Westin every 10 and 40 minutes after the hour. The cab fare is $25–35.

Driving directions to the hotel are available at www.westin.com/seattle.

Ancillary Session on PNW Issues: June 3, 2–5 PM.

There will be no charge for NABC 15 registrants. Speakers will be announced in due course; further information may be obtained at http://arc.cahe.wsu.edu/nabc.

For information about registration contact:
Washington State University
Conferences and Professional Programs
208 Van Doren Hall
PO Box 645222
WA 99164-5222
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papaya resistant to papaya ringspot virus that has had a favorable reception in Japan. Consultant Mike Thornton will relate the story of the failure to market a GM potato, and David Hoisington (CIMMYT, Mexico) and Christopher Ngichabe (Kenya Agricultural Research Institute, Nairobi) will discuss a successful collaboration to produce insect-resistant maize for developing countries. The meeting will conclude with a global, humanitarian perspective by Gary Toenniessen, director for World Food Security at the Rockefeller Foundation.

NABC 15 will be organized around three modules describing the crossroad of society and science, sustainability, and the consumer perspective. Each module will begin with speakers presenting contrasting views, who, upon concluding their talks, will be questioned by a panel of experts. Then the general audience will have an opportunity to pose questions and make comments. So that everyone at the meeting may offer their views, structured breakout sessions will be held to fully engage the audience in discussion. The published proceedings from NABC 15 will provide not only a record of the formal sessions, but will also feature a record of the questions, discussions, and recommendations resulting from the breakout sessions.

Following the formal NABC program there will be an ancillary session to address Pacific Northwest issues of sustainable agriculture, small farms and urban agriculture, and community food systems on the afternoon of June 3.

Biotechnology: Science and Society at a Crossroad will be held at the Westin Hotel in Seattle, Washington, June 1–3, 2003. Registration, hotel-reservation and other details are provided on the opposite page.

For information about the program contact:
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generally reject the notion that anything we do could result in harm. Some of our past practices related to pesticides, however, leave us vulnerable to those who feel more oversight of our research is justified. We are also in the uncomfortable position of arguing that the perceived environmental and health dangers from agricultural biotechnology are equivalent to those associated with our current practices. For instance, the argument that importation of exotic plants can as easily contaminate gene pools of native species with exotic genes as can transgenic species is not a very satisfying argument for the benign effects of agricultural biotechnology. It may be that some of our practices need to be carefully reexamined.

My household is currently attempting to train a new puppy and that experience has enlightened me regarding the importance of limits and oversight. Training a dog to live inside with you requires that very clear limits be imposed on its behavior. The incredible zest of a puppy for uninhibited exploration is wonderful to watch, but becomes very irritating when it results in shoes, carpets and furniture being damaged. Imposing limits makes sense, and, in training a puppy, I have learned that oversight is key to the process. Maybe medical biotechnology has achieved its current level of comfort primarily because of strong oversight with clear limits. Although no one enjoys having limits placed on their activities, I am sure that my puppy prefers sleeping inside.

Personally, I feel that the health-safety issues related to agricultural biotechnology will continue to fade as time passes. We have the potential to defuse much criticism if the technology improves the quality and healthfulness of foods available to consumers and, importantly, to chefs and other food-opinion leaders. The important issues related to agricultural biotechnology are related to environmental impacts, and these will be difficult to defuse by appeals to trust us. We will probably need to accept limits and oversight and so it may be wise for the agricultural community to be proactive in establishing self-policing oversight panels as a step toward restoring our credibility as good stewards of the environment.

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