

# David Quist

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## Summary of Qualifications

<i>Research</i>	Leader in the field of GMO detection and risk analysis, technical training, development of analytical tools for GMO identification
<i>Teaching</i>	Effectively communicates scientific information in accessible language for laboratory training, the public, and policymakers
<i>Consulting</i>	Provides consulting on GMO risk and technical capacitation to governments and civil groups worldwide
<i>Media</i>	Extensive experience with the media on scientific communication to the public through news media and documentary filmmakers
<i>Interdisciplinarity</i>	Conducts research synthesizing multiple scientific disciplines; policy and management outcomes analysis
<i>Outreach</i>	Participates in lectures, workshops, and conferences worldwide on GMO biosafety research with an emphasis of public good research, to protect human health, the environment, and food security

## Research emphasis and expertise

First and foremost, as a scientist, I am dedicated to research that protects the public interest, and believe strongly in independent studies on the impacts of new (bio)technologies that have far reaching biological, environmental and social consequences. Following our discovery of transgenic DNA introgressed into the traditional maize landraces in Oaxaca, Mexico (See Quist & Chapela, *Nature* (2001) v.416 p.541-543), I have focused my investigations on the ecological and genetic diversity implications of transgenic DNA movement into Mexican maize. Genetically engineered DNA is an excellent marker system for studying horizontal (across species boundaries) and vertical (sexually, within species) modes of DNA transfer. This research provides important insights into the evolutionary and ecological significance trans-Kingdom DNA transfers in the environment and in the food supply. For the future, I intend to continue to build on this framework in order to ask more holistic questions on gene function and expression—including the external influences and internal complex processes (biotic, abiotic and anthropogenic) that contribute to epigenetic effects within

organisms— with an eye on how these influence the evolution and safety of these organisms.

In the public sphere, I have been active in technical capacitation of biosafety research for government agencies, NGOs and local communities for commodity marketing and for the implementation of national biosafety laws. Within my research, I have developed new protocols for efficient and high throughput analysis of samples for DNA analysis.

## Education

- Ph.D., Environmental Science, Policy & Management, Univ. of California, Berkeley 1998-2004.
- B.Sc., Botany (w/honors), U of Washington, Seattle, *cum laude*. GPA: 3.75. 1994-1996
- A.A., Seattle Central Community College, Seattle, WA. 1991-1993

## Professional experience

- Consultant, Resource Conservation and Management, GMO issues. 1999-present
- Graduate Student Researcher, ESPM, University of California, Berkeley. 1998-2004
- Visiting Scholar, Norwegian Institute of Gene Ecology, Tromsø, Norway. 2003
- Researcher, Department of Botany, Field Museum, Chicago, IL. 1997-1998

## Publications

**Quist, D.**, 2004. Transgene ecology: An ecological perspective for GMO risk assessment. In: Breckling B & Verhoeven R (eds) Risk Hazard Damage - Specification of criteria to assess environmental impact of genetically modified organisms. Bonn, Bundesamt für Naturschutz, Naturschutz und Biologische Vielfalt 1:239-244

**Quist, D.**, 2003. Putting Genes in Chloroplast Not "Environmentally Friendly". *ISIS* 17:1 24-26.

**Quist, D.** & Chapela, I.H., 2002. Communications Arising: Response to criticism of "Transgenic DNA introgressed into traditional maize landraces in Oaxaca, Mexico". *Nature* 416: 602

**Quist, D.** & Chapela, I.H., 2001. Transgenic DNA introgressed into traditional maize landraces in Oaxaca, Mexico. *Nature* 414: 541-543.

**Quist, D;** Garbelotto, M; Wu, D.P; Weber, M; and Chapela, I.H., 2000. Diversidad ectomicorrícica de *Oreomunnea mexicana* (Juglandaceae) en la Sierra Juárez, Oaxaca: Consideraciones ecológicas de la micotrofia en comunidades forestales monodominantes.

*Boletín de la Reunión Iberoamericana y III Symposium Nacional sobre Simbiosis Micorrízica*, p. 62.

Seidl, Michelle, Liu, Yajuan, Rogers, Scott, **Quist, David** and Ammirati, Joe. 2000. Another view of the genus *Cortinarius*. Abstract in: *MSA Bulletin* p. 68.

**Quist, D.**, Garbelotto, M, and Chapela, I.H., 1999. Mycorrhizal ecology of *Oreommunea*: Implications of fungal community structure on plant distribution and diversity. Preliminary investigations in the Sierra Juarez, Oaxaca, Mexico. Abstract in: *Libro de resúmenes del III Congreso Latinoamericano de Micología*, p. 99-100.

Wu, Q-X.; Mueller, G.M, **Quist, D.** and Huang, Y-Q, 1998. Preliminary assessment of macrofungal diversity in the temperate forests of Chang Bai Mountain, China. Abstract in: Mycological Soc. of Am Ann. Mtg, *Inoculum* 48: 7.

**Quist, D.** and J.F. Ammirati, 1996. Assessing the mycorrhizal potential of *Xylaria* sp. in epiphytic *Orchidaceae*. Abstract in: *First International Conference on Mycorrhizae (ICOM I)*, *Bulletin*, p. 99.

### **Laboratory Experience and Related Skills**

I have extensive experience with standard laboratory practice and safety. My particular area of lab expertise involves the design, troubleshooting and analysis of PCR-based detection methods to detect genetically modified organisms. This includes multiplex and RT-PCR protocols (from plant tissue and seed tissue), and TAIL-PCR for molecular characterization and quantitative PCR applications. I routinely use other various PCR-based analyses, including RFLPs, AFLPs, Southern and dot-blot hybridizations, gene walking (TAIL-PCR, iPCR and AL-PCR), DNA sequencing (ABI 310 and 377), and micro-array hybridization and analysis. I have experience with maize breeding, and pathogen inoculation of host plants in greenhouse studies.

From my work in Mycology, I have extensive experience in sterile technique, microbiological culturing, microscopy and slide preparation (phase-contrast and stereoscopic), micromorphometric analyses, statistical analyses of sampling pools (cluster and principle component analysis) and phylogenetic analysis of fungal populations.

### **Recent honors/awards**

- 2003-2004, honored as a Switzer Environmental Fellow, bestowed upon 20 graduate students nationwide to “enthusiastic individuals who have the ability, determination and integrity to become environmental leaders in the 21st century”.
- 2001-2003, received UC Berkeley’s William Carroll Smith Fellowship, given to only one student at the University of California-Berkeley annually.

## **Recent Grants**

- 2002-2003 Pilot Study Grant, Center for Latin American Studies, UC Berkeley
- 2001-2002 Tinker Research Grant, Center for Latin Am. Studies, UC Berkeley
- 2001. Project grant, The Philanthropic Collaborative, San Francisco
- 2001. Project grant, Jennifer Altman Foundation/Kapor/Starfire Fund, San Francisco

## **Teaching experience**

Over the last 8 years, I have facilitated, supervised, organized, or taught a number of workshops and research curricula at various academic and professional levels. I was responsible for developing and teaching 3 workshops in Oaxaca and Mexico, over a three year period, to capacitate a remote laboratory with standard molecular biology methods for GMO testing. At Berkeley, I supervised 5 undergrad students working on projects within my advisor's laboratory. I further assisted in teaching three more workshops, (a GMO detection workshop in Berkeley, a biosafety course in Norway and one on fungal cultivation in Mexico--see the "Technical Workshops Conducted/Participated" section for more details). In 1996, I was a teaching assistant instructing General Botany courses at the University of Washington, and responsible for the development of laboratory curriculum and teaching of over 90 students in 3 laboratory sections in a given semester.

## **Presentations**

2004." Disciplinary differences in GMO Research: Reflections on the case of Mexican maize contamination". Swiss Federal Institute of Technology, Zurich, Switzerland.

2003. "From the molecular maize to Mexican maize: Transgene ecology for GMO risk assessment". Conference: "Risk, Hazard, Damage: Specification of Criteria to Assess Environmental Impact of Genetically Modified Organisms", University of Bremen, Hanover, Germany.

2003. "Why should we worry? Environmental effects of GMOs" Workshop on the Holistic Foundations for Assessment and Regulation of Genetic Engineering and Genetically Modified Organisms, University of Tromsø, Norway.

2003. "Dollars, dogma and discourse in the new culture of Science: The Mexican maize controversy" 2003 SYMBIOSE Symposium, University of Oslo, Norway.

2003. "Transgene contamination in centers of crop diversity: The case of Mexico and Maize" Workshop on the Holistic Foundations for Assessment and Regulation of Genetic Engineering and Genetically Modified Organisms, University of Tromsø, Norway.

2003. "Exploratory Research & Controversy: The story of the Mexican Maize Scandal". Norwegian Institute of Gene Ecology, Norway.

2003. "Pros and Con-troversy: Discourse, Dogma and Dollars in the New Culture of Science". "Progress and its discontents" lecture series, Princeton University, NJ, USA.

2003. "Ecological Conversations: Linking Ecological and Social systems" California College of Arts and Crafts, San Francisco, CA, USA.

2002. "Biology of GMOs" GE & Food Aid International Conference, Lilongwe, Malawi

2002. "Environmental, Health, and Socioeconomic Impacts of GE technology: Realities and Myths" GE and Food Aid International Conference, Lilongwe, Malawi.

2001. "La contaminación de maiz criollo por transgenicos en La Sierra Juárez", Oaxaca, México. Presented to the Union de Comunidades Forestales Zapoteca y Chinanteca (UZACHI), Capulalpam, Oaxaca, Mexico.

1999. "Diversidad ectomicorrícica de Oreomunnea mexicana (Juglandaceae) en la Sierra Juárez, Oaxaca: Consideraciones ecologicas de la micotrofia en comunidades forestales monodominantes." III Symposium sobre Simbiosis Micorrízica, Guanajuato, Mexico.

### **Technical Workshops conducted**

2004. "PCR-based detection methods of transgenic papaya: practical considerations for sampling, detection methods, and analysis", Berkeley, USA

2002. "Taller de capacitacion: Metodos geneticos III" Laboratorio de Recursos Micologicos de Oaxaca, La Trinidad, Oaxaca, Mexico.

2000. "Taller de capacitacion: Metodos geneticos II" Laboratorio de Recursos Micologicos de Oaxaca, La Trinidad, Oaxaca, Mexico.

1999. "Taller de capacitacion: Metodos geneticos I" Laboratorio de Recursos Micologicos de Oaxaca, La Trinidad, Oaxaca, Mexico.

1998. "Collection y identificación de hongos forestales" to La union de comunidades forestales Zapoteco-Chinanteca (UZACHI), La Esperanza, Oaxaca, Mexico.

### **Technical Workshops participated in**

2003. "Workshop on the Holistic Foundations for Assessment and Regulation of Genetic Engineering and Genetically Modified Organisms", University of Tromsø, Norway.

1999. "Cultivo de Hongos" (w/I. Chapela), to UZACHI, Capulalpam, Oaxaca, Mexico.

### **Conferences attended**

2004. 8<sup>th</sup> International Symposium on Biosafety of Genetically Modified Organisms. Montpellier, France.

2003. Conference on "Risk, Hazard, Damage: Specification of Criteria to Assess Environmental Impact of Genetically Modified Organisms" hosted by the University of Bremen in Hanover, Germany.

2003. SYMBIOSE Symposium, University of Oslo, Norway.

2003. Workshop on the impact of genetically modified plants (GMPs) on microbial communities, Tromsø, Norway.

2002. GE and Food Aid International Conference, Lilongwe, Malawi.

2002. Role of UNEP, UNU and Japan in the 2002 World Summit on Sustainable Development. Tokyo, Japan.

2001. La problema de contaminación de maíz Mexicano. Guadalajara, Mexico.

1999. Reunión Ibero. y III Symposium Nacional sobre Simbiosis Micorrízica, Guanajuato, Mexico.

1998. Mycological Society of America annual conference, San Juan, Puerto Rico.

1997. Mycological Society of America annual conference, Montreal, Canada.

1997. "Fungal Identification strategies workshop", University of Costa Rica, San Jose, Costa Rica.

1995. First International Conference on Mycorrhizae, Univ. of California, Berkeley, CA.

### **Conferences/panel discussions organized**

2003. "Pulse of Scientific Freedom in the Age of the Biotech Industry", UC Berkeley.

### **Posters**

2004. Bridging the gaps in biosafety research. 8<sup>th</sup> International Symposium on the Biosafety of Genetically Modified Organisms. Montpellier, France.

1999. "Diversidad ectomicorrícica de *Oreomunnea mexicana* (*Juglandaceae*) en la Sierra Juárez, Oaxaca: Consideraciones ecológicas de la micotrofia en comunidades forestales monodominantes". III Congreso Latinoamericano de Micología, Caracas, Venezuela.

1995. "Assessing the mycorrhizal potential of *Xylaria* sp. in epiphytic *Orchidaceae*". First International Conference on Mycorrhizae (ICOM I), Berkeley, CA.

### **Professional affiliations**

International Society for Biosafety Research, member  
The Independent Science Panel, member

### **Interviews with media**

I have given interviews to national and international media outlets documenting my research, including *Science Magazine*, *Nature Magazine*, National Public Radio (USA), Canadian Broadcasting Company, BBC (UK) *El Pais* (Spain) *The New York Times*, Bill Moyer's NOW, *Seedling Magazine*, *New Scientist*, Radio New Zealand, Chanel La Cinq (France) TV Azteca (Mexico), and others within Africa, Asia, and South America.

### **Travel/Exposure to Cultural Experiences**

My work and personal life has afforded me a number of opportunities for travel and exposure to different cultures and languages (which I quite enjoy). Having traveled to over 25 countries in Europe, Central and South America, Asia, Africa, Micronesia, and the Caribbean has shown me many new perspectives of what it personally means to be human to interact with others with compassion, concern, and positive impact. I have spent extensive time in Mexico living in small indigenous Zapoteco and Chinanteco communities in rural Oaxaca, Mexico. I have had a number of extended stays in Osaka, Japan and in Tromsø, Norway. These experiences with the wonderful people I have met on my journeys have truly broadened my own horizons and life choices.

### **Foreign Languages**

English (native), Spanish (fluent), Japanese (conversational)

### **References available upon request**