

CURRICULUM VITAE

Hector E. Flores
Dean and Professor of Biological Sciences
College of Science
Texas State University

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 108 Rogers Ridge St.
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Birthdate: August 10, 1950, Lima, Peru

Citizenship: U.S. A.

I. ACADEMIC/PROFESSIONAL BACKGROUND

Name: Hector E. Flores

Title: Dean and Professor of Biology
College of Science

EDUCATIONAL BACKGROUND:

Degree	Year	University	Major	Thesis/Dissertation
Ph.D.	1983	Yale University	Biology	Studies on the Physiology and Biochemistry of Polyamines in Higher Plants
M.Phil.	1981	Yale University	Biology	
M.S.	1977	University of Puerto Rico	Horticulture	<i>In Vitro</i> Culture and Radiation Studies of African Violet <i>Saintpaulia ionantha Wendl</i>
B.S.	1974	Universidad Nacional Mayor de San Marcos, Lima, Peru	Biology	
	1977-1978	Rutgers University New Brunswick, NJ	Dept. of Horticulture	
	1975-1977	University of Puerto Rico, Mayaguez, Puerto Rico	Dept. of Horticulture, College of Agriculture	
	1956-1967	Colegio Parroquial Santa Rosa de Lima (Maryknoll Order), Lima, Peru		

UNIVERSITY EXPERIENCE:

Position	University	Dates
Dean and Professor of Biology College of Science	Texas State University	2005 – present
Dean and Professor of Biological Sciences College of Sciences and Mathematics	Arkansas State University, Jonesboro	2003 – 2005

Professor, Department of Plant Pathology/Biotechnology Institute	The Pennsylvania State University	1994 – 2003
Visiting Scientist (Program Director)	National Science Foundation	1999 – 2001
Director, Science, Technology, and Society Program	The Pennsylvania State University	1996 – 1999
Associate Professor, Department of Plant Pathology/Biotechnology Institute	The Pennsylvania State University	1988 – 1994
Assistant Professor, Department of Plant Pathology and Crop Physiology	Louisiana State University	1985 – 1988
Post-Doctoral Research Associate	ARCO Plant Cell Research Institute, Dublin, California	1983 – 1985
Research Assistant, Department of Biology	Yale University	1980 – 1982
Teaching Fellow, Department of Biology	Yale University	1978 – 1980
Research Assistant, Plant Cell and Protoplast Culture, Department of Horticulture	Rutgers University	1977 – 1978
Teaching Assistant, Research Assistant, <i>Rhizobium</i> Project	University of Puerto Rico	1976 – 1977
Instructor in Biology and Molecular Biology	Universidad de San Marcos	1973 - 1975

ADMINISTRATIVE EXPERIENCE AND ACCOMPLISHMENTS AS DEAN:

July 2003- June 2005 – Dean of Science and Mathematics (Arkansas State University)

- Recruited six outstanding new faculty, two each in Biological Sciences, Computer Sciences, and Chemistry & Physics, and took advantage of target of opportunities to build diversity in key areas
- Established a faculty development and mentoring program with focus on our tenure-track faculty (representing about 25% of College faculty), starting with a Grantsmanship Workshop (October 23, 2004)
- Led a pilot summer program in 2004, offering research experiences for talented high school students from North East Arkansas; this was concurrent with strong outreach to the NEA schools, with emphasis on teacher training and diversity
- Started development of a new model for student entrepreneurship across Colleges (Sciences and Mathematics, Business, Agriculture), focused on the establishment of an Organic Gardening and Farming venture
- Conducted a comprehensive office and laboratory space inventory for the whole College and started making office and research reallocations based on faculty productivity
- Chaired a special Task Force on Scholarship and Graduate Education as part of the ASU-wide Strategic Planning process
- Served as ASU representative to the Arkansas EPSCoR program

July 2005-December 2008 – Dean of Science (Texas State University)

Recruited over 50 outstanding faculty to the College (out of about 160, about 30% faculty turnover in 4 years), including several “star” hires in Physics and Mathematics

Led a major administrative turnover in the College of Science. I hired one full time Associate Dean for Academic Affairs (effective February 2007) and one part time Associate Dean for Research (effective January 2006). Since Fall 2006, I have hired new chairs in four Departments (Biology, Physics, computer Science, Engineering and Technology), have a search for a new chair of Chemistry under way, and hired the founding director of Engineering in Fall 2007 (see below)

Enhanced diversity in the College by hiring 3 African American faculty and 2 Hispanic faculty in the Department of Mathematics alone, and 5 Hispanic faculty (3 in Engineering, one in Mathematics); several recent female faculty hires have been made as well

Established a comprehensive faculty development initiative, with emphasis on grantsmanship and “tenure-smarts”; numerous grants workshops have been conducted to date, including an ongoing proposal writing working group of faculty and administrators (including myself); among others, our tenure-track faculty submitted about 10 CAREER proposals to the NSF in 2006-2007. These efforts are starting to bear fruit. Since December 2007, our College faculty have received almost \$4 M in competitive funding from the National Science Foundation alone

Our college has received a \$5 M gift to name the new Ingram School of Engineering to start fall 2008; we anticipate several endowed positions, faculty chairs, and a large number of scholarships

Hired the founding director of the Ingram School of Engineering in Fall 2007

Named a new chaired professor of Materials Science, Dr. Terry Golding, and the new director of the Materials Science and Engineering Graduate program, Dr. Thomas Myers (two major “star” hires, with an investment of over \$1 M

Received approval in January 2008 for a new doctoral program in Mathematics Education

A new doctoral program in Computer Science is planned for 2010

Developed a proposal for a new interdisciplinary doctorate in Materials Science and Engineering (MSE), involving at least 3 Departments (Physics, Computer Science, Chemistry) and one School (Engineering)

Made 3 “star” hires for the future MSE program in Spring 2008, including the program Director, Dr. Thomas Myers

Secured a donation of an MBE equipment valued at \$4M from FreeScale

Received a new earmark for \$2 M for a new Center for Heterofunctional Materials

Secured a \$4.5 M matching from the State of Texas to recruit superior talent for the new MSE program

Engaged in vigorous outreach to the local School Districts and industry, with the help of our new College Advisory Council

Established a College Advisory Council to identify donors for scholarship endowments. Personally involved in proactive networking with potential donors

Have made a strong contribution towards Texas State's goal of becoming a Hispanic serving institution; several undergraduate programs already exceed 25% Hispanic enrollment

A new major in Electrical engineering has been approved with an effective starting date of Fall 2008

Signed an international teaching and research collaboration agreement between the College of Science at Texas State and the Universidad Nacional Mayor de San Marcos in Lima, Peru

Proposal for a new program in Concrete Industry Management (CIM), only one of 5 nationwide, is pending approval in FY 2009

II. TEACHING

COURSES TAUGHT:

Introduction to Biotechnology, The Pennsylvania State University, Fall 1990, 1991
 Plant Biotechnology (graduate level course), The Pennsylvania State University, Spring 1989, Spring 1990, Spring 1991, Spring 1992
 Workshop on Polyamines in Higher Plants, Centro de Investigacion Cientifica de Yucatan, Merida, Mexico, November 9-13, 1987
 Plant Growth and Development (graduate level course), Louisiana State University, 1987
 Current Literature in Plant Physiology (graduate seminar), Louisiana State University, 1986-1987
 Plant Biotechnology (graduate level course), Louisiana State University, 1985-1986
 Introductory Biology, Yale University, 1978-1980
 Nuclear Techniques in Agriculture, University of Puerto Rico, 1976-77
 Advanced Plant Physiology, University of Puerto Rico, 1976-77

COURSE DEVELOPMENT AT PENN STATE:

Seeds of Change: The Uses of Plants (3 credits undergraduate level course) Spring 1994-1999, 2002, 2003

This 3 credit undergraduate course is an interdisciplinary and multicultural introduction to economic botany. Plants are at the core of our everyday needs (food, clothing, shelter, medicines, beverages), simple pleasures (flowers, fragrances) and pervasive problems (energy supply, drug addiction, famine). The goal of this course is to understand these uses

from a "holistic" perspective, so that the student can critically address the challenges posed by the pressures on natural resources, the search for new crops, medicines and biomaterials, and the influence of new technologies such as genetic engineering. A botanical background on the major groups of useful plants is complemented with historical, geographical, social and economic perspectives. The course format includes lectures, discussions, demonstrations, field trips, and experiential learning for a variety of plant uses.

Scientific Creativity (PPATH 597D, 1 credit graduate level course) Fall 1993, Spring 1995-1999, 2002

This course is intended as a discussion forum for the "intellectual ecology" of science, as applied to experimental biology. In addition to "doing" science, it is important, and perhaps essential, to understand the nature of the scientific process and the forces that shape it. This course explores how scientific discoveries are made, what is the nature of scientific creativity, and how do sociological, psychological and economic forces affect the way science is done. The course also attempts to "demythologize" the scientific method and other established pillars of experimental science. The purpose of this intellectual exercise is not to cast doubt on or undermine the scientific process, but to better understand what we do, and hopefully to improve our science as a result.

Specialized Plant Biochemistry (PPATH 597C, 2 credit graduate level course) Fall 1993, 1994, 1996, 1998, 2002

This course covers aspects of biochemistry which are unique to plants, and which are not covered in other courses available at Penn State. Using biochemical pathways as the focal point, we discuss carbohydrate, nitrogen and lipid intermediary metabolism, the major classes of secondary metabolites (terpenes, polyketides, alkaloids, phenolics), and "specialty" plant proteins. The emphasis is on compartmentation and regulation of plant metabolism, and the biological significance of plant natural products. Readings from the textbook are complemented by recent reviews and critical discussions of original papers

Plant Biotechnology (PPATH 597, 3 credit graduate level course) Spring 1989, 1990, 1991, 1992, Fall 1995

Plant biotechnology results from the contributions of three main areas of research: plant tissue culture, recombinant DNA technology and biochemical engineering. This course provides a state-of-the-art assessment of this multidisciplinary research area, with emphasis on recent reviews and critical discussion of classic and current papers. The topics targeted for discussion range from a historical overview to recent developments in gene transfer to plants, and are grouped into four sections: a) biology of plant cell and organ culture; b) plant cells as chemical factories; c) genetic engineering of crop improvement and plant metabolism, and d) political, economic and social issues in plant biotechnology.

In addition to the above, Dr. Flores has offered two 1 credit courses as part of the training program in Root Biology which he directs:

**Current Literature in Root Biology (Spring 1994)
Root Growth and Development (Fall 1994)**

OTHER TEACHING:

Graduate Course in Plant Biochemistry, Centro de Investigacion Cientifica de Yucatan, Merida, Mexico, November 26-30, 2001.

International workshop on Science and Creativity, Centro de Investigacion Cientifica de Yucatan, Merida, Mexico, November 22-23, 2001.

Grant Proposal Writing Workshop, Universidad Agraria La Molina, Lima, Peru, February 9, 2001.

International course on Science and Creativity, Centro de Investigacion Cientifica de Yucatan, Merida, Mexico, February 15-17, 1999.

International course experience: Spring break class trip to Peru, Seeds of Change course, March 7-16, 1998 (8 Honors students)

Course coordinator and invited faculty, Course/Workshop on **Frontiers in Plant Biology**, Universidad Nacional de Rio Cuarto (Argentina), July 27-August 7, 1998. Workshop featured lectures, discussions and laboratory exercises delivered collaboratively between U.S. and Latin American plant scientists.

Invited faculty, graduate level course on **Plant Tissue Culture and Plant Biotechnology**, State University of Sao Paulo (Botucatu, Brazil), November 3-7, 1997. Five hours per day of intensive lecture/discussion/laboratory demonstrations.

Invited faculty, graduate level course on **Plant Tissue Culture and Plant Biotechnology**, Universidad de Rio Cuarto (Cordoba, Argentina), June 23-July 4, 1997. Five hours per day of intensive lecture/discussion/laboratory demonstrations.

Invited faculty, **Chautauqua Conference on Science Technology, and Society**, University of Puerto Rico (Mayaguez Campus, PR), March 10-12, 1997. Five hours of intensive lecture/discussion per day.

Invited faculty, graduate level course on **Biosynthetic Potential of Plants in the 21st Century**, College of Chemistry, Universidad Nacional Autonoma de Mexico (Mexico, D.F.), January 26-31, 1997. Five hours per day of intensive lecture/discussions.

Invited faculty, **Course on Production of Secondary Metabolites in Plant Cell and Organ Culture**, November 14-18, 1994, Facultad de Farmacia y Bioquimica, Universidad de Buenos Aires, Argentina, one week of lectures/discussions.

Invited faculty, **12th Annual Summer School on Organic Chemistry**, March 9-13, 1992, Universidad Federal de Sao Carlos, Sao Paulo, Brazil. One week of lectures/discussions in Plant Biotechnology.

Invited Faculty, **Workshop on Plant Cell, Tissue and Organ Culture**, Center for Scientific Research, Yucatan, Mexico, November 19-30, 1990. One day lecture on root cultures as sources of commercially important plant chemicals.

Instructor for Biotechnology Institute Workshops, Penn State University: **Bioreactors for Cell Culture**, April and September, 1990, 1991, 1992 **Plant Biotechnology**, August 1991, 1992, 1993, 1994.

Faculty in charge, **Plant Pathology Graduate Seminar, 1995-1996.**

Numerous invited lectures on courses in biotechnology, horticulture, science education, science, technology, and society.

SUPERVISION OF GRADUTE DISSERTATIONS:

<u>Student</u>	<u>Major</u>	<u>Degree</u>	<u>Year Granted</u>
Guimaraes, Rejane	Plant Physiology	Ph.D.	Summer 2001
Wu, Tian-shu	Plant Pathology	M.S.	Spring 1999
Vivanco, Jorge	Plant Pathology	Ph.D.	Fall 1999
Flores, Teresita	Plant Physiology	Ph.D.	Spring 1999
Medina-Bolivar, Luis Fabricio	Plant Physiology	Ph.D.	Summer 1997

Wagner, Laura	Plant Physiology	Ph.D.	Summer 1995
Savary, Brett	Plant Physiology	Ph.D.	Summer 1995
Cuello, Joel	Plant Physiology	M.S.	Fall 1995
Flores, Teresita	Plant Physiology	M.S.	Fall 1993
Halperin, Steven	Plant Physiology	M.S.	Spring 1992
McKinley-Doyle, Tonya	Biology	M.S.	Spring 1992
Protacio, Calixto	Plant Physiology	Ph.D.	Summer 1991
Moriconi, Daniel	Plant Physiology (Louisiana State Univ.)	M.S.	Fall 1989

MEMBERSHIP ON GRADUATE DEGREE CANDIDATES' COMMITTEES:

<u>Student</u>	<u>Major</u>	<u>Degree</u>	<u>Year Granted</u>
Schaeffer, Toni	Plant Physiology	Ph.D.	In progress
Kim, Jae Hak	Entomology	Ph.D.	In progress
Sheik, Pervaize	Ecology	Ph.D.	In progress
Carvalho, Edgar	Chemical Engineering	Ph.D.	In progress
Flynn, William	Plant Physiology	Ph.D.	In Progress
Nickles, David	Science Education	Ph.D.	Summer 1999
McLoughlin, Andrea	Science Education	Ph.D.	Fall 1998
Ramakrishnan, Divakar	Chemical Engineering	Ph.D.	Summer 1997
Kim, Jae Hak	Entomology	M.Sc.	Spring 1997
English, Michael	Plant Pathology	M.Sc.	Summer 1996
Singh, Gurmeet	Chemical Engineering	Ph.D.	Spring 1995
Fang-Mei Pien, Linda	Plant Physiology	Ph.D.	Spring 1994
Jing, George	Plant Pathology	Ph.D.	Fall 1994
Cuello, Joel	Agricultural and Biological Engineering	Ph.D.	Fall 1993
DeHass, Cindy	Chemical Engineering	M.Sc.	Fall 1993
Cao, Heping	Plant Physiology	Ph.D.	Fall 1993
Panuri, Sachin	Chemical Engineering	Ph.D.	Summer 1993
Larsen, William	Chemical Engineering	Ph.D.	Spring 1993*
Landry, Laurie	Plant Physiology	Ph.D.	Spring 1992
Chou, Jyh Ching	Plant Physiology	M.Sc.	Summer 1992

* Lehigh University

INDEPENDENT STUDY SUPERVISED (496 FOR UNDERGRADUATE AND 596 FOR GRADUATE STUDENTS, RESPECTIVELY):

<u>Student</u>	<u>Major</u>	<u>Degree</u>	<u>Year Granted</u>
Garver, Emmalea	Horticulture	B.S.	2001*
Momotan, Ko	Biology	B.S.	2000
Bowen, Sarah	Agr. Engineering	B.S.	2000*
Ulcine, Jonathan	Biochemistry	B.S.	1998
Steele, Danielle	Biochemistry	B.S.	1998
Egoavil, Jack	Biology	B.S.	1998
Weitzel, Daniel	Horticulture	B.S.	1998
Frumkin, Jillian	STS/Piece Studies	B.S.	1998
Fueyo, Joanna	Biology	B.S.	1997
Thompson, Steve	STS	B.S.	1997
Snyder, Janice	Biology	B.S.	1997
Frisch, John	Biology/STS	B.S.	1996
Shee, Paige	Biology	B.S.	1996
Hill, Jennifer	Molecular Biology	B.S.	1995*
Behner, Seth	Biology	B.S.	1995*
Torres, Robert	Plant Science	B.S.	1995*
Dalious, Jenna	Plant Science	B.S.	1995*
Gruver, Matthew	Plant Science	B.S.	1994
Lu, Xiao-Hong	Plant Physiology	Ph.D.	1994
Chang, Eric	Biology	B.S.	1994
Fraley, James	Biology	B.S.	1994
Jing, George	Plant Pathology	Ph.D.	1993
Landry, Laurie	Plant Physiology	Ph.D.	1992
Lewis, Eldrin	Microbiology	B.S.	1991
Sanchez, Amarylis	Microbiology	B.S.	1990

* Senior/Honors thesis

UNDERGRADUATE STUDENT ADVISING:

Summer Minority Internships

Gerad Ford (Summer 1998)

Jack Egoavil (Spring 1998)

Eldrin Lewis (June-July 1989, June-July 1990, Jan-May 1991)

Juan Ruiz (June-July 1990)

Gale Hollowell (June-July 1989)

Daneen Monroe (June-July 1988)

Research Experience for Undergraduates NSF Program (Summer 1993)

Daniel Maldonado (June-August 1993)*

Jennifer Hill (June-August 1993)

Root Biology Summer Fellows (Root Biology Training Program)

Maria Perez (June-July 1999)*

Lorina Shinsato (June-July 1998)

Kimberly Kiel (June-July 1997)*

Elizabeth Martini (June-July 1997)
 Jonah Wittkamper (June-July 1996)
 Rebecca Garland (June-July 1995)
 Windy Boyd (June-July 1995)
 Katya Melnik (June-July 1994)*
 Myrelis Aponte (June-July 1994)*
 Jennifer Puffett (June-July 1994)

* Minority Student

HIGH SCHOOL STUDENT ADVISING:

USDA Minority Apprentice

Nadia Saidu (June-July 1999)
 Sean Koger (June-July, 1997)
 Zara Davis (June-July, 1995)
 Natasha Spence (June-July, 1992)
 Corey Hill (June-July 1991)

Pennsylvania Governor's School

Lita Lee (July 1992)
 Jody Dektor (July 1992)
 Charlotte Walker (July 1991)
 Robert Suran (July 1991)
 Yvonne Chia (July 1991)
 Robert Torres (July 1989)
 April Younker (July 1989)
 Lisa Komenda (July 1989)

VISITING STUDENTS AND SCIENTISTS:

Dr. Marcela Kurina, Universidad Nacional de San Luis, Argentina, May-July 1999.
 Dr. Nina M. Cadiz, University of Philippines, Los Banos, October 1997-October 1998.
 Ms. Ana Paula Ulian de Araujo, Physics Institute, Universidad de Sao Carlos, Brazil), January-June 1996.
 Dr. Luis Martin-Clossas (Department of Hortifruticulture, University of Lleida, Spain), July-September 1995. In vitro tuberization in potato.
 Mrs. Salma El-Sawy (Department of Pharmacy, University of El Cairo, Egypt) USAID Peace Fellowship for Training in Plant Tissue Culture and Secondary Metabolite Production, June 1993-June 1995).
 Dr. Lubov Grigorieva (Russian Academy of Agricultural Sciences, Siberian Branch, Novosibirsk, Russia, training in plant stress physiology, October-November 1991).
 Mr. Luigi Sanita (Consorzio di Recherche Applicate Alla Biotecnologia, training in plant tissue culture, August-November 1991).
 Mr. Felipe Vazquez (Centro de Investigacion Cientifica, Yucatan, Mexico, 2 week training, November 1990).
 Ignacio Maldonado (Centro de Investigacion Cientifica, Yucatan, Mexico, 2 week training, August 1990).

- Ms. Sylvia Coimbra (Centro de Citologia Experimental, University of Porto, Portugal, 9/89, 2 week training on Amaranth tissue culture)
- Ms. Ana Morilla Camacho (University of Sevilla, Sevilla, Spain, 5/89-7/89, 3 month training on polyamine research).
- Mr. Joska Gerendas (Institut für Pflanzenerabrag und Bodenkuade, Universität Kiel, 9/88, 2 week training on HPLC).
- Prof. Martin Luckner (Martin Luther University, East Germany, 5/88-6/88, Project: Tissue Culture of *Digitalis* "hairy roots").

POSTDOCTORAL FELLOWS:

- Dr. Lindy Brigham (8/96-8/98, Root Biology postdoctoral fellow)
Project: Biochemistry and Molecular Biology of Root Exudates
- Dr. Ana M. Pelacho - (5/95-10/95, University of Lleida, Spain)
Project: In Vitro Tuberization in Potato
- Dr. Y. Sheng Ni - (2/90-2/91, Beijing University, China)
Project: Regulation of the Ozone Response and Genetic Strategies of Control
- Dr. Masanori Kuroyanagi - (8/89-12/89, Shizuoka University, Japan)
Project: Elicitation of Asteraceae "hairy roots"
- Dr. Yao-ren Dai - (2/89-2/93, Beijing University, China)
Projects: Polyacetylene Metabolism in Heterotrophic and Photosynthetic Cultures of Asteraceae;
Regulation of the Ozone Response and Genetic Strategies of Control
- Dr. Takeshi Yamazaki - (8/88-8/89, National Institute Hyg. Sci., Japan)
Project: Natural Sweeteners from Cell and Root Cultures of *Stevia* and *Lippia*

EXTERNAL Ph.D. THESIS EXAMINER:

- Jacob George, Ph.D. in Biotechnology, University of Mysore (India).
Thesis: "Biotechnological and Phytochemical Studies for Production of Food-Value Metabolites from *Decalepis hamiltoni* Wt. & Arn and *Cichorium intybus* L.", 2000.
- S. Ramachandra Rao, Ph.D. in Biotechnology, University of Mysore (India).
Thesis: "Studies on Biotransformation to Produce Phytochemicals of Importance Using Plant Cell Cultures", 2000.
- K.N. Udayakumar, Ph.D. in Biotechnology, Mysore University (India).
Thesis: "Biotechnological and Phytochemical Studies for Production of Food-value Metabolites from *Decalepis hamiltoni* Wt. & Arn. and *Cichorium intybus* L., 1998.
- Anne Jokela, Ph.D. in Biology, University of Oulu (Finland).
Thesis: Structural and Functional Responses of Scots Pine Needles to Nutrient Stress, 1998.
- Halter Reese, Ph.D. in Forestry, University of Melbourne (Australia).
Thesis: Physiological Aspects of Root Growth of *Eucalyptus pauciflora* subsp. *pauciflora* and *Eucalyptus nitens*, 1997.
- Bharati Ghosh, Ph.D. in Plant Physiology, Javadpur University (India).
Thesis: Polyamine Metabolism During Salinity Stress in Rice (*Oryza sativa*) Cultivars, 1997.
- Sankar Das, Ph.D. in Botany, Bose Institute (Calcutta, India).
Thesis: Cellular Responses of *Brassica* Under Salinity Stress, 1994.
- Arthur Fett-Netto, Ph. D. in Botany (1994), University of Toronto (Canada).
Thesis: Metabolism and Accumulation of Taxol and Related Taxoids in Cell Cultures of *Taxus cuspidata* Sieb & Zucc., 1994.

Rina Basu, Ph. D. in Science (1991), University of Calcutta (Boise Institute, India).

Thesis: Physiological Responses of Crop Plant Due to Environmental Stresses, 1991.

Daniel Burtin, Metabolisme des Amines Libres et Conjuguees au Cours du Developement et la Croissance de *Nicotiana tabacum* var xanthi n.c.: Approches Biochimiques et Moleculaires. Universite de Bourgogne.

Soumen Chattopadhyay, Ph.D. in Science, University of Calcutta (Bose Institute, India). Thesis: Studies on Polyamines in Relation to Source and Sink Organ Cultures, 1989.

GRANTS AND CONTRACTS:

Dr. Flores has been awarded about \$3.0 M in grants as Principal Investigator, from Federal (NSF,USDA) and other competitive programs (private foundations). In addition, Dr. Flores has been Co-PI in several competitive grants (Federal, State, University) which amount to over \$ 2.0 M.

<u>Date</u>	<u>Title</u>	<u>Sponsor</u>	<u>Amount</u>
2005-2009	Henry Louis Stokes Alliance for Minority Participation Principal Investigator (Texas State)	National Science Foundation	\$112,700/yr
1999-2000	Why We Eat What We Eat? A Novel Interdisciplinary Freshman Seminar Principal Investigator	Keystone 21: Kellog Food Systems Professionals Education Program	\$7,500
1999-2000	Starting A MultiState Effort In Biotechnology Education Outreach Co-Principal Investigator	Keystone 21: Kellog Food Systems Professionals Education Program	\$7,460
1998-2001	The Andean Root and Tuber Crops: Realizing the Promise of Forgotten Foods Principal Investigator	The McKnight Foundation	\$790,00
1997-2003	Radical Biology II: An Inter-disciplinary Research Training Program in Root Biology Principal Investigator	National Science Foundation	\$630,000
1997-1999	High-Performance Liquid Chromatography System for The Center for Bioremediation and Detoxification: Multi-User Biological Equipment and Instrumentation Resources Co-Principal Investigator	National Science Foundation	\$63,668
1996-2001	Signaling in Plant Development and in Response to the	National Science Foundation	\$562,500

Environment

Co-Principal Investigator

1996-1997	Toward the Next Columbian Exchange Principal Investigator	NASA Space Grant	\$4,000
1995-1998	The Andean Root and Tuber Crops Realizing the Promise of Forgotten Principal Investigator	The McKnight Foundation	\$250,500
1995-1997	Development of Biological Indicators of Soil and Plant Health Principal Investigator	USDA	\$20,344
1992-1998	Radical Biology: An Inter-disciplinary Research Training Group in Root Biology Principal Investigator	DOE/NSF/USDA	\$ 1.17M
1994-1997	National Needs Graduate Fellowship Program. Training Program in Plant Biotechnology. Principal Investigator	USDA-CSRS	\$108,000
1992-1995	Underground Secondary Metabolism: Polyacetylene Biosynthesis in Root Cultures of Asteraceae Principal Investigator	National Science Foundation	\$120,000
1991-1996	Biotechnology Training Grant (Co-PI and member of Steering Committee)	National Institute of Health	\$450,006
1991-1995	Regulation, Control and Design of Root Systems for the Production of Valuable Plant Metabolites Principal Investigator	National Science Foundation	\$567,000
1991-1995	Root Reactor Design for Scaled-up Production of Pharmaceutical Proteins (Co-PI with Paul Walker and Wayne Curtis)	Penn State Intercollege Program	\$108,008
1993-1994	Seeds of Change: The Uses of Plants	United Federal Bank Endowment for the	\$3,500

	Principal Investigator	Enhancement of Undergraduate Instruction	
1990-1994	National Needs Graduate Fellowship Program. Training Program in Plant Biotechnology. Principal Investigator	USDA-CSRS	\$96,000
1992-1993	The Pacific Yew (<i>Taxus brevifolia</i>) as an Endangered Plant Resource; Micropropagation and Root Culture as an Alternative for Conservation and Utilization Principal Investigator	Charles A. Lindbergh Fund	\$10,580
1990-1993	Regulation of the Ozone Response and Genetic Strategies of Control. (Co-Principal Investigator with Eva Pell (PI) and Richard Arteca)	Electric Power Research Institute Grant	\$538,897
1989-1992	Molecular Basis of Gametophytic Self-Incompatibility in <i>Petunia</i> and <i>Solanum</i> . (Co-Principal Investigator with Teh-hui Kao)	National Science Foundation	\$265,000
1991	USDA/CSRS Research Apprenticeship Program		\$500
1990-1991	Production of Pharmaceutically Important Proteins in "Hairy Root" Cultures. Principal Investigator	Pennsylvania Res. Corp.	\$15,000
1990-1991	Financial support for the 5th Annual Penn State Symposium in Plant Physiology (Co-PI Investigator with Jack Shannon and Richard Arteca)	National Science Foundation	\$ 4,000
1990-1991	Financial support for the 5th Annual Penn State Symposium in Plant Physiology (Co-PI Investigator with Jack Shannon and Richard Arteca)	USDA Competitive Grants	\$ 4,000
1990	Evaluation of Hydrophylic Polymers for Plant Tissue Culture.	ARCO Chemical Company	\$10,000

Principal Investigator

1990	Production of Taxol in Organ Cultures of Yew. Principal Investigator	Hawaii Biotechnology Group	\$ 3,615
1989-1990	Root Secondary Metabolism. Principal Investigator	Penn State Research Initiation Grant	\$ 7,000
1989-1990	Sanguinarine Production in Root Cultures of Bloodroot. Principal Investigator	Penn State BioMedical Research	\$ 8,000
1988-1991	Root cultures for the Production of Biologically Active Secondary Metabolites. Principal Investigator	National Science Foundation	\$134,757
1988-1991	Structure and Function of Self-Incompatibility Genes: A Biotechnological Approach (Co-Principal Investigator with Teh-hui Kao)	Penn State - Intercollege Program Proposal	\$90,000
1987-1988	Graduate Assistantship	LSU College of Agriculture	\$12,500
1987-1988	Root Culture Project	Louisiana Quality Thrust Fund	\$65,000
1986-87		Root Culture Project	LSU Biotechnology
	\$50,000	Institute	
1986	Equipment Grant	LSU Council on Research	\$8,000

III. SCHOLARLY/CREATIVE**BOOKS:**

- Flores, H.E., J. Lynch, and D. Eissenstat (Eds.). 1998. Radical Biology: Advances and Perspectives on the Function of Plant Roots. Current Topics in Plant Physiology, Vol. 18, Amer. Soc. Plant Physiol., Rockville, MD, 549 pp.
- Gustine, D., and H.E. Flores (Eds.). 1995. Phytochemicals and Health. Current Topics in Plant Physiology, Vol. 15, Amer. Soc. Plant Physiol., Rockville, MD, 348 pp.

- Singh, B.J., H.E. Flores, and J.C. Shannon (Eds.). 1992. Biosynthesis and Molecular Regulation of Amino Acids in Plants. Current Topics in Plant Physiology, Vol. 7, Amer. Soc. Plant Physiol., Rockville, MD, 386 pp.
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BOOK REVIEWS:

- Flores, H.E. 1998. Soilborne Diseases of Tropical Crops. R.J. Hillocks and J.M. Waller, Eds. CAB International, 1997. Quart. Rev. Biol. (in press).
- Flores, H.E. 1990. Plant Biotechnology. S. D. King and C. J. Arntzen, Eds., Biotechnology Series, Butterworths, 1989. American Scientist 79:172.
- Flores, H.E. 1989. Opportunities for Phytochemistry in Plant Biotechnology. E. E. Conn, Ed., Rec. Adv. Phytochemistry, Plenum Press, 1998. American Scientist 77:497.

MANUSCRIPTS SUBMITTED FOR PUBLICATION OR IN PREPARATION:

- Vivanco, J.M., and H.E. Flores. Ribosome-inactivating proteins in storage roots and root cultures of *Mirabilis* species: Biosynthesis, localization, elicitation. Plant Physiology (in preparation).
- Brigham, L., and H.E. Flores. Ethnototany of pharmaceutical pigments from *Lithospermum* and other Boraginaceae spp. (in preparation).
- Flores, T., M. Ramirez, and H.E. Flores. Relation between oxalate content and susceptibility to tuber weevil (*Microtrypes* spp.:Curculionidae) in oca (*Oxalis tuberosa* Molina). J. Econ. Entomol. (in preparation).
- Guimaraes, R., and H.E. Flores. A novel antifungal protein from the storage tuber of the Andean tuber crop *Tropaeolum tuberosum*. (in preparation).

MANUSCRIPT REVIEWER FOR REFEREED JOURNALS:

Dr. Flores has served as Ad-Hoc reviewer for the following publications/journals:
 American Chemical Society Books, Annals of Botany, Archives of Biochemistry and Biophysics, Biotechnology and Bioengineering, Canadian Journal of Botany, Critical Reviews in Biotechnology, Ecology, HortScience, In Vitro Cellular & Developmental Biology-PLANT, Journal of Natural Products, Journal of Plant Physiology, Molecular Biology, Physiologia Plantarum, Phytochemical Analysis, Phytochemistry, Plant Cell Reports, Plant, Cell & Environment, Plant, Cell, Tissue and Organ Culture, Plant Growth Regulation, Plant Growth Regulators Society of America, Plant Molecular Biology, Plant Physiology, Plant Physiology and Biochemistry, Plant Science, Plant & Soil, Plant Tissue Culture & Biotechnology, Tree Physiology.

GRANT PROPOSAL AND FELLOWSHIP APPLICATION REVIEWER:

Dr. Flores has served as external reviewer for the following agencies/foundations:

National Science Foundation, USDA National Research Competitive Grants Program, Small Business Innovation Grant Program (NSF), USDA Multicultural Scholars Program, Cooperative High Technology Research and Development Grant Program (State of Connecticut), Department of Energy- BioSciences Program, USDA BARD Program, National Research Council (Washington, D.C.), Natural Sciences and Engineering Research Council (Canada), National Institutes of Health, U.S. Department of Energy, West Virginia NSF EPSCoR Program, USDA North Central Biotechnology Program, National Biotechnology Program (Colombia), National Science and Technology Program (Argentina), Charles Lindbergh Foundation, John Simon Guggenheim Memorial Foundation.

LETTERS TO THE EDITOR:

Medford, J.I., and H.E. Flores. 1990. Plant Scientist's responsibilities: an alternative. *Plant Cell* 2:501-502.

NEWSPAPER ARTICLES:

Flores, H.E. 1997. Those annual tenure blues worry at PSU. *Centre Daily Times*, April 1 (Op-Ed).

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- Flores, H.E., T.S. Walker, R.L. Guimaraes, and J.M. Vivanco. 2002. Andean Root and Tuber Crops: Underground Rainbows. *HortScience* 38: 161-167.
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PAPERS PRESENTED AT TECHNICAL AND PROFESSIONAL MEETINGS:

- Flores, H.E.** 2002. Ingenieria Metabolica: De la Etnobotanica a la Genomica. REDBIO Symposium on Plant Biotechnology, Buenos Aires, Argentina, October 20-22 (**Keynote Address**).
- Flores, H.E.** 2002. Radicle BIOchemistry: Integrating Traditional and Modern Knowledge. Danforth Center (St. Louis MO) 1st Annual Symposium in Rhizosphere Biology: October 20 (**Keynote Address**).
- Flores, H.E.** 2002. Genetically Modified Organisms in Developing Countries; Elements for a New Dialogue. Forum on Transgenic Organisms in Agriculture, Universidad Autonoma de Chapingo, Mexico (April 10) (**Keynote speaker**)
- Flores, H.E.** 2001. Human Nutrition and Underutilized foods: An Underground View from High Above. Keystone Symposium: Plant Foods for Human Health, Beaver Run, CO, April 6-11. (**Invited Speaker**).
- Flores, H.E.** 2001. Enhancing Cultural Diversity in Environmental Careers. AIBS Meeting, Arlington, VA, March 25.
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- Guimaraes, R.L., and **H.E. Flores.** 2000. Study of glucosinolates from mashua (*Tropaeolum tuberosum*). *Plant Biology 2000, ASPP Annual Meeting, San Diego, CA, July 15-19.*

- Flores, H.E.** 2000. Rainbows from the Earth: on Biochemistry, Roots and People. Keynote address, III Zia Symposium, New Mexico State University (Las Cruces, NM), January 7-8, 2000. (**Keynote Speaker**).
- Flores, H.E.** 1999. New Paradigms for International Collaborative Research in Plant Biology. IX National Plant Biochemistry and Molecular Biology Congress and III Mexico-US Symposium (Merida, Mexico), October 30-Nov.2 (**Invited Speaker**).
- Flores, H.E.** 1999. Biochemistry, biotechnology, and indigenous knowledge: Underground Perspectives. Latin American Biotechnology Congress (Huatulco, Mexico), Sept. 13-17 (**Keynote Speaker**).
- Guimaraes, R.L., **H.E. Flores**, B.Savary. 1999. Isolation and characterization of defense proteins from mashua tubers. ASPP Annual Meeting, Baltimore (MD), July 24-28
- Vivanco, J.M., and **H.E. Flores**. 1999. Identification of proteins related to *Mirabilis expansa* RIPs in *Mirabilis* spp. Storage and hairy roots: biosynthesis and elicitation. ASPP Annual Meeting, Baltimore (MD), July 24-28
- Flores, T., and **H.E. Flores**. 1999. Studies on the proteins from the Andean tuber crop *Oxalis tuberosa*. ASPP Annual Meeting, Baltimore (MD), July 24-28.
- Flores, H.E.**, M. Ramirez, R. Ortega, and R. Estrada 1998. Perspectives on the biochemical diversity of plant roots. Cassava Biotechnology Network Conference, Salvador (Brasil), Nov. 3-7 (**Invited Speaker**).
- Flores, H.E.** 1998. The Andean root and tuber crops: Realizing the promise of forgotten foods. World Bank-ASA Symposium on Sustainable Agricultural Systems in Transition, Baltimore (MD), Oct. 20-22 (**Invited Speaker**).
- Vivanco, J., and **H.E. Flores**. 1998. Andean RIPs: biology of bioactive proteins from a forgotten root crop. ASPP Annual Meeting, Madison (WI), June 26-July 2.
- Brigham, L., and **H.E. Flores**. 1998. Regulation of a related suite of anti-microbial naphthoquinones (shikonin derivatives) in *Lithospermum erythrorhizon* is controlled by endogenous and exogenous signals. ASPP Annual Meeting, Madison (WI), June 26-July 2.
- Flores, T., and **H.E. Flores**. 1998. Studies of the proteins present in the Andean tuber crop *Oxalis tuberosa*. ASPP Annual Meeting, Madison (WI), June 26-July 2.
- Flores, H.E.** 1998. Perspectives on the integration of indigenous agricultural knowledge, biochemistry, and biotechnology. Biotechnology Conference: Andean Region, Lima (Peru), May 24-27 (**Invited Speaker**).
- Flores, H.E.** 1998. Medicinal plants and healing. Conference on Alternative Health Care & Integrative Medicine, Penn Stater Conference Center, The Pennsylvania State University, April 24-25 (**Invited Speaker**).
- Flores, H.E.** 1997. Back to our roots: Toward an integration of traditional and modern agricultural knowledge. Society for Social Studies of Science, Annual Meeting, University of Arizona, Tucson, Arizona, October 23-26.
- Flores, H.E.** 1997. Radical biology: Bright future for the dark side of plants. American Society of Agronomy Annual Meeting (Anaheim, CA), October 26-30 (**Keynote Speaker**).
- Flores, H.E.** 1997. Bread and Salad- Towards a deconstruction of everyday foods. ASPP Annual Meeting Vancouver (BC) August 2-6.
- Vivanco, J.M., Querci, M., and **Flores, H.E.** 1997. Inhibitory effect of the *Mirabilis jalapa* extracts against potato virus infection. ASPP Annual Meeting, Vancouver (BC) August 2-6.
- Vivanco, J.M., Savary, B. J., and **Flores, H.E.** 1997. Characterization of a storage root protein isolated from the Andean crop species *Mirabilis expansa* ASPP Annual Meeting, Vancouver (BC) August 2-6.
- Flores, T., Michaels, P.J., and **Flores, H.E.** 1997. Isolation of a major soluble protein present in tubers of oca (*Oxalis tuberosa* M.) ASPP Annual Meeting, Vancouver (BC), August 2-6.

- Medina-Bolivar, F. and **Flores, H.E.** 1997. Regulation of tropane alkaloid vs. sesquiterpene biosynthesis in hairy roots of *Hyoscyamus muticus*. ASPP Annual Meeting, Vancouver (BC), August 2-6.
- Brigham, L.A., Michaels, P.J., and **Flores, H.E.** 1997. Developmental and induced production of shikonin in *Lithospermum erythrorhizon* roots. ASPP Annual Meeting, Vancouver (BC), August 2-6.
- Wu, T. and **Flores, H.E.** 1997. Aseptic aphids and hairy root herbivory: *in vitro* co-culture study plant-insect interactions. ASPP Annual Meeting, Vancouver (BC), August 2-6.
- Medina-Bolivar, F. and **Flores, H.E.** 1997. Metabolic engineering of the sesquiterpene pathway in hairy roots of *Hyoscyamus muticus*. ASPP Annual Meeting, Vancouver (BC), August 2-6.
- Flores, H.E.** 1997. The Andean Root and Tuber Crops: Realizing the Promise of forgotten Foods. McKnight Foundation Conference on Collaborative Crop Research, Granlibakken Resort, (Tahoe City, CA), June 13-17 (**Invited Speaker**).
- Vivanco, J.A., D. Weitzel, and **H.E. Flores.** 1997. Characterization of a major storage root protein isolated from the Andean root crop species *Mirabilis expansa*. 11th Annual Penn State Symposium in Plant Physiology, University Park, PA, May 22-24.
- Brigham, L.A., P.J. Michaels, and **H.E. Flores.** 1997. The ability of the naphthoquinone shikonin to influence microorganisms in the rhizosphere of *Lithospermum erythrorhizon*. 11th Annual Penn State Symposium in Plant Physiology, University Park, PA, May 22-24.
- Wu, T. and **H.E. Flores.** 1997. Aseptic aphids and hairy root herbivory: In vitro co-culture to study plant-insect interactions. 11th Annual Penn State Symposium in Plant Physiology, University Park, PA, May 22-24.
- Medina-Bolivar, F. and **H.E. Flores.** 1997. Biosynthesis of constitutive versus inducible metabolites in hairy root cultures of *Hyoscyamus muticus*. 11th Annual Penn State Symposium in Plant Physiology, University Park, PA, May 22-24.
- Flores, H.E.** 1997. The future of radical biology? Connecting roots, people, and scientists. 11th Annual Penn State Symposium in Plant Physiology, University Park, PA, May 22-24.
- Flores, H.E.** 1996. Plants and People. Global Summit in Science and Science Education, San Francisco, CA, December 27-29 (**Invited Speaker**).
- Flores, H.E.** 1996. Integrating Research in Root Biology, Ethnobotany, and Biotechnology. Latin American Congress in Tropical Root Crops, San Pedro (Sao Paulo, Brazil), October 7-10 (**Invited Speaker**).
- Flores, H.E.** 1996. Underground Blues: Biochemistry of Plant Storage Organs. Phytochemical Society of North America Annual Meeting, New Orleans, LA, August 10-14 (**Invited Speaker**).
- Flores, H.E.** 1996. Inside/Outside: Reflections on Roots and Scientists. American Society of Plant Physiologists Annual Meeting, San Antonio (TX), July 27-31 (**Invited Speaker**).
- Flores, H.E.** 1996. Regulation of Root-Specific Metabolism. International Symposium on Root Growth and Development, Jerusalem, Israel, June 25-30 (**Invited Speaker**).
- Flores, H.E.** 1995. The Andean Root and Tuber Crops: Realizing the Promise of Forgotten Foods. UNITWIN Networking Conference, Lima, Peru, Nov. 13.
- Flores, H.E.** 1995. Underground Food and Medicine Research: Toward an Integration of Biotechnology and Traditional Knowledge. IV Latin American Congress of Ethnomedicine, Quito, Ecuador, Nov. 6-9 (**Invited Speaker**).
- Flores, H.E.** 1995. Seeds of Change: Soul Searching Through Undergraduate and Graduate Teaching. ASPP Annual Meeting, Charlotte, NC, July 29-August 2. (**Invited Speaker**).
- Flores, H.E.** 1995. Seeds of Change: Enhancing botanical literacy across disciplines. ASPP Annual Meeting, Charlotte, NC, July 29-August 2.

- Michaels, P.J., J.D. Puffett, C.E. Weber, and **H.E. Flores**. 1995. Exudation of root metabolites in response to phosphorus stress and fungal elicitation. ASPP Annual Meeting, Charlotte, NC, July 29-August 2.
- Butterfield, J.W., and **H.E. Flores**. 1995. Effect of taxol and mitotic poisons on *Phytophthora cinnamomi* at the mycelium and cell levels. ASPP Annual Meeting, Charlotte, NC, July 29-August 2.
- Flores, H.E.** 1995. Underground Metabolism In Latin America: Potential and Perspectives. II Latin American Meeting in Plant Biotechnology (REDBIO 95), June 4-9, Iguazu, Argentina (**Invited Speaker**).
- Flores, H.E.** 1994. Biochemistry, Biotechnology and Natural Products: Underground Stories. Pan American Congress of Pharmacy and Biochemistry, November 14-19, Buenos Aires, Argentina (**Invited Speaker**).
- Flores, H.E.** 1994. Roots as Chemical Factories. Annual Meeting, Plant Growth Regulator Society of America, Portland, OR, August 4-6, 1994 (**Invited Speaker**).
- El-Sawy, S., and **H.E. Flores**. 1994. *In vitro* propagation and corm formation in colchicine-producing plants. ASPP Annual Meeting, Portland, OR, July 30-August 3.
- Medina-Bolivar, F., M. Gruver, and **H.E. Flores**. 1994. Regulation of constitutive and inducible secondary metabolites in hairy roots of *Hyoscyamus muticus*. ASPP Annual Meeting, Portland, OR, July 30-August 3.
- Wagner, L.J., and **H.E. Flores**. 1994. Fungal growth inhibition by taxol and its relation to microtubules. ASPP Annual Meeting, Portland, OR, July 30-August 3.
- Savary, B.J., J.J. Hill, and **H.E. Flores**. 1994. Characterization of class III chitinases produced in *Trichosanthes kirilowii* var. Japonica root cultures. ASPP Annual Meeting, Portland, OR, July 30-August 3.
- Wagner, L.J., M Ludwiczak, and **H.E. Flores**. 1994. Phosphate reduction enhances *in vitro* root growth of *Taxus media* X Hicksii. ASPP Annual Meeting, Portland, OR, July 30-August 3.
- Flores, H.E.** 1994. Production of micro- and macromolecules in root cultures. V Gatlinburg Symposium, University of Tennessee (Knoxville), May 26-28. (**Invited Speaker**).
- Flores, H. E.** 1993. Root cultures as sources of bioactive phytochemicals. Frontiers in Biochemical Engineering and Bioprocessing, University of Colorado, Boulder (CO), September 19-23. (**Invited Speaker**).
- Medina-Bolivar, L.F., and **H.E. Flores**. 1993. A novel approach for tropane alkaloid overproduction from hairy roots of *Hyoscyamus muticus*. ASPP Annual Meeting, Minneapolis, MN, July 31-August 4.
- Flores, H. E.** 1993. *In vitro* germination and taxane production of *Taxus* spp. ASPP Annual Meeting, Minneapolis, MN, July 31-August 4.
- Michaels, P.J., and **H.E. Flores**. 1993. Polyacetylenes in *Carthamus tinctorius* "hairy roots." ASPP Annual Meeting, Minneapolis, MN, July 31-August 4.
- Savary, B.J., and **H.E. Flores**. 1993. Characterization of bioactive proteins produced in root cultures of *Trichosanthes kirilowii* var. Japonica. ASPP Annual Meeting, Minneapolis, MN, July 31-August 4.
- Wagner, L.J., and **H.E. Flores**. 1993. Characterization of fungal growth inhibition by taxanes. ASPP Annual Meeting, Minneapolis, MN, July 31-August 4.
- Flores, H. E.** 1993. "Hairy roots", secondary metabolism and bioreactors: rediscovering root biochemistry. 4th Int. Symp. on Structure and Function of Roots, Stara Lesna, Slovakia, June 20-26 (**Invited Speaker**).
- Flores, H. E.** 1993. Radical Biology: Integrating biotechnology, biochemistry and biodiversity. 2do. Congreso Argentino de Biotecnología Vegetal, Cordoba, Argentina, May 30-June 3 (**Invited Speaker**).

- Savary, B.J., and **H.E. Flores**. 1993. Biosynthesis of defense-related proteins in root cultures of *Trichosanthes kirilowii* var. *Japonicum*. 8th Annual Penn State Symposium in Plant Physiology, State College, PA, May 20-22.
- Flores, H.E.** 1993. Biology and engineering of root cultures. American Society of Microbiology Annual Meeting, Atlanta, GA, May 16-20. **(Invited Speaker)**.
- Flores, T., L.J. Wagner, and **H.E. Flores**. 1993. Embryo culture and taxane production in *Taxus* spp. International Yew Resources Conference, Berkeley, CA, March 12-13.
- Flores, H.E.** 1992. Root-specific metabolism. International Symposium in Root Development, New York University, December 6-8. **(Invited Speaker)**
- Savary, B.J., and **H.E. Flores**. 1992. Biosynthesis of ribosome-inactivating and pathogenesis-related proteins in hairy root cultures of *Trichosanthes* spp. American Institute of Chemical Engineers Annual Meeting, Miami, November.
- Flores, T., L.J. Wagner, P. Sgrignoli-Michaels, and **H.E. Flores**. 1992. *In vitro* germination of embryos and protoplast isolation from *Taxus* spp. 2nd Taxol Workshop, National Cancer Institute, Frederick, VA, September 23-24.
- Flores, H. E.**, W.R. Curtis, and A.E. Humphrey. 1992. Biology and engineering of bioactive metabolite production in plant organ cultures, International Biotechnology Symposium, Washington, D.C., August 16-20.
- Flores, H. E.** 1992. *In vitro* alternatives for the conservation of the Pacific yew, an endangered medicinal tree, Charles A. Lindbergh Symposium, Little Falls, MN, August 14-16. **(Invited Speaker)**
- Savary, B.J., and **H.E. Flores**. 1992. Analysis of bioactive proteins produced in root cultures of *Trichosanthes kirilowii* var. *Japonica*. ASPP Annual Meeting, Pittsburgh, PA, August 1-5.
- Wagner, L.J., and **H.E. Flores**. 1992. Patterns of protein and secondary metabolite production in root cultures of *Momordica charantia*. ASPP Annual Meeting, Pittsburgh, PA, August 1-5.
- Flores, T., M. Mehring, P. Sgrignoli, and **H.E. Flores**. 1992. *In vitro* germination of *Ginkgo biloba* and *Taxus* spp. embryos. ASPP Annual Meeting, Pittsburgh, PA, August 1-5.
- Flores, H. E.** 1992. Acetylenes, RIPs and other chemical oddities: The biosynthetic potential of plant roots. ASPP Annual Meeting, Pittsburgh, PA, August 1-5.
- Cuello, J.L., and **H.E. Flores**. 1992. Photosynthetic potential an polyacetylene production in *Acmella* and *Bidens* "hairy root" cultures. ASPP Annual Meeting, Pittsburgh, PA, August 1-5.
- Flores, H. E.** 1992. Underground phytochemistry: Micro- and macromolecules from "hairy roots". American Chemical Society, San Francisco, April 6. **(Invited Speaker)**
- Flores, H. E.** 1991. Underground phytochemistry: micro- and macromolecules from "hairy roots". American Chemical Society Spring 1992 Meeting, San Francisco, CA, April 7. **(Invited Speaker)**
- Flores, H. E.** 1991. Manipulation of plant root biosynthetic potential. American Chemical Society, New York (NY), August 30. **(Invited Speaker)**
- Ni, Y.S., Y.-R. Dai, F. Negm, N. Reddy, R. Artega, **H.E. Flores**, and E. Pell. 1991. Effect of ozone on indicators of leaf aging. ASPP Annual Meeting, Albuquerque, NM, July 28-August 1.
- Sgrignoli, P.J., and **H.E. Flores**. 1991. Embryo culture of *Taxus* species. ASPP Annual Meeting, Albuquerque, NM, July 28-August 1
- Doyle, T., and **H.E. Flores**. 1991. Does lipoxygenase play a role in the synthesis of polyacetylenes? ASPP Annual Meeting, Albuquerque, NM, July 28-August 1.
- Savary, B.J., and **H.E. Flores**. 1991. Production of extracellular proteins by root cultures of Chinese medicinal cucumber (*Trichosanthes* spp.). ASPP Annual Meeting, Albuquerque, NM, July 28-August 1.
- Protacio, C.M., and **H.E. Flores**. 1991. Mechanism of *in vitro* growth stimulation by catecholamines. ASPP Annual Meeting, Albuquerque, NM, July 28-August 1.

- Dai, Y.-R., A. Freyer, and **H.E. Flores**. 1991. Biotransformation of butylated hydroxytoluene in "hairy root" cultures. ASPP Annual Meeting, Albuquerque, NM, July 28-August 1.
- Flores, H. E.** 1991. Approaches towards understanding and manipulating the biosynthetic of plant roots. VII Engineering Foundation Symposium on Cell Engineering, Santa Barbara, CA. **(Invited Speaker)**
- Flores, H. E.** 1991. Catabolism and secondary metabolism on plant polyamines. Juan March Foundation Symposium, Madrid, Spain. **(Invited Speaker)**.
- Dai, Y.-R., P.J. Sgrignoli, and **H.E. Flores**. 1990. Initiation and characteristics of two photoautotrophic "hairy root" cultures. ASPP Annual Meeting, Indianapolis, IN.
- Protacio, C.M., and **H.E. Flores**. 1990. Effect of dopamine on growth and morphogenesis in thin cell layers and "hairy root" cultures. ASPP Annual Meeting, Indianapolis, IN.
- Halperin, S.J., and **H.E. Flores**. 1990. Osmotic stress increases hyoscyamine production in "hairy root" cultures of *Hyoscyamus muticus*. ASPP Annual Meeting, Indianapolis, IN.
- Signs, M.W., Y.-R. Dai, and **H.E. Flores**. 1990. Kinetics of phytoalexin and ethylene production in elicited "hairy root" and suspension cultures of *Hyoscyamus muticus*. ASPP Annual Meeting, Indianapolis, IN.
- Protacio, C.M., and **H.E. Flores**. Effect of selected monoamines on ethylene formation, growth, and morphogenesis in thin cell layers and "hairy root" cultures. International Plant Tissue Culture Congress, Amsterdam, Netherlands.
- Halperin, S.J. and **H.E. Flores**. 1990. The effect of osmotic stress on hyoscyamine and proline accumulation in *Hyoscyamus muticus* "hairy root" cultures. International Plant Tissue Culture Congress, Amsterdam, Netherlands.
- Dai, Y.-R., P. J. Sgrignoli, and **H.E. Flores**. 1990. Initiation and characteristics of two photoautotrophic "hairy root" cultures. International Plant Tissue Culture Congress, Amsterdam, Netherlands.
- Flores, H. E.** 1990. Polyamines, plant development, and flowering. 82nd Annual Meeting, North Dakota Academy of Science (Fargo). **(Invited Speaker)**.
- Flores, H. E.** 1989. Underground metabolism: Plant biotechnology and natural products. San Jose, Costa Rica. **(Invited Speaker)**.
- Flores, H. E.** 1989. Biosynthetic potential of roots. American Chemical Society 45th Southwest Regional Meeting, Baton Rouge, Louisiana **(Invited Speaker)**.
- Flores, H. E.** 1989. Underground metabolism: The rediscovery of a classic experimental system. 1st Bavarian Symposium on "Formation of Secondary Products from Higher Plants", Ringberg Castle, Bavaria, West Germany. **(Invited Speaker)**
- Protacio, C.M., and **H.E. Flores**. 1989. Polyamine metabolism in tobacco *in vitro* flower system. ASPP/Canadian Society of Plant Physiologists Annual Meeting, Toronto, Ontario.
- Yamazaki, T., and **H.E. Flores**. 1989. Production of steviol glucosides by hairy root Cultures of *Stevia*. ASPP/Canadian Society of Plant Physiologists Annual Meeting, Toronto, Canada.
- M.W. Signs, and **H.E. Flores**. 1989. Elicitation of sesquiterpene phytoalexin biosynthesis in transformed root cultures of *Hyoscyamus muticus* L. ASPP/Canadian Society of Plant Physiologists Annual Meeting, Toronto, Ontario.
- Flores, H. E.** 1989. Natural products from plant cell and organ cultures. Tissue Culture Meeting, Lima, Peru. **(Invited speaker)**
- Flores, H. E.**, and M. A. Hjortso. 1988. Bioreactors for plant root cultures. American Chemical Society, Los Angeles, CA. **(Invited Speaker)**
- Flores, H. E.**, D. N. Moriconi, and M. C. Rush. Somatic embryogenesis and plant regeneration in *Physalis ixocarpa* Brot. ASPP Annual Meeting, Reno, NV.
- Flores, H. E.**, and M. A. Hjortso. 1988. Natural products from plant organ culture: Back to our roots. American Chemical Society, Los Angeles, CA. **(Invited Speaker)**

- Flores, H. E.**, J. J. Pickard, and M. Signs. 1988. Elicitation of polyacetylene production in "hairy root" cultures of Asteraceae. ASPP Annual Meeting, Reno, NV.
- Flores, H. E.** and C. M. Protacio. 1988. Primary and secondary metabolism of polyamines in plants. Phytochemical Society of North America Annual Meeting, Iowa City, IA. **(Invited Speaker)**
- Flores, H. E.** 1988. Underground metabolism: Useful secondary products from cultured roots. 3rd ASM Conference on Biotechnology, Washington, DC. **(Invited Speaker)**
- Flores, H. E.**, N. H. Fischer, and M.A. Hjortso. 1987. Roots as sources of agrichemicals and pharmaceuticals: New experimental approaches. American Chemical Society Meetings, New Orleans, Louisiana. **(Invited Speaker)**
- Flores, H. E.** 1987. Production of polyacetylenes and thiophenes in heterotrophic and photosynthetic root cultures of Asteraceae. 1st Int. Conf. Nat. Occ. Acetylenes, Aarhus, Denmark, July 12-22.
- Flores, H. E.**, J.J. Pickard, and M.W. Hoy. 1987. Secondary metabolism in heterotrophic and photosynthetic root cultures of Asteraceae. ASPP Annual Meeting, St. Louis, Missouri.
- Flores, H. E.**, M.W. Hoy, and J.J. Pickard. 1986. Production of secondary metabolites by normal and transformed root cultures. VI Int. Cong. Plant Tissue and Cell Culture, Minneapolis, Minnesota, August 3-8.
- Flores, H. E.**, J. J. Jaynes, J. Kim, M. Yang, and J. Pickard. 1986. Introduction and expression of viroid cDNAs and of a synthetic gene sequence into crop plants. ASPP Annual Meeting, Baton Rouge, Louisiana.
- Flores, H. E.**, T.C. Tian, J. J. Pickard, and J.J. Jaynes. 1986. Integration and expression of viroid cDNAs in plant cells. U.C.L.A. Symposium Molecular Strategies for Crop Protection, Steamboat Springs, Colorado, March 30 and April 6.
- Flores, H. E.** 1985. Use of plant cell and tissue culture in the production of biological chemicals. American Chemical Society Annual Meeting, Chicago, Illinois, Sept. 9-12. **(Invited Speaker)**
- Flores, H. E.**, and P. Filner. 1985. "Hairy Roots" of *Solanaceae* as a source of alkaloids. ASPP Annual Meeting, Providence, Rhode Island.
- Flores, H. E.** 1985. Regulation of putrescine and alkaloid metabolism in plant cell and organ cultures. Tissue Culture Association Annual Meeting, New Orleans, Louisiana, June 7-11. **(Invited Speaker)**
- Flores, H. E.** 1984. Metabolismo de poliaminas en relacion a estres. Congreso Mejicano de Bioquimica, Morelia, Mexico, Nov. 12-15. **(Invited Speaker)**
- Flores, H. E.** 1984. Metabolic relationships of putrescine, GABA and alkaloids in cell and root cultures of *Solanaceae*. Symposium on "Primary and Secondary Metabolism in Plant Cell Cultures," University of Giessen, Germany, Sept. 5-8. **(Invited Speaker)**
- Flores, H. E.**, and P. Filner. 1984. Putrescine metabolism in tobacco cell suspensions: Effect of nitrogen source. ASPP Annual Meeting, Davis, California.
- Flores, H. E.** 1984. Polyamine metabolism and plant stress. U.C.L.A. Symposium "Cellular and Molecular Biology of Plant Stress," Keystone, Colorado, April 15-19. **(Invited Speaker)**
- Flores, H.E.** 1983. Polyamine metabolism. Workshop on Mechanisms of Stress Adaptation. ASPP Annual Meeting, Fort Collins, Colorado. **(Invited Speaker)**
- Flores, H.E.** 1983. Polamine metabolism in plants in response to stress. Plant Biology Symposium, University of Minnesota, St. Paul, MN. **(Invited Speaker)**
- Flores, H. E.**, F. Dumortier, N. S. Shekhawat, and A. W. Galston. 1983. Reverse polyamine gradients in etiolated pea and corn seedlings. ASPP Annual Meeting, Fort Collins, Colorado.
- Flores, H. E.**, and A.W. Galston. 1983. Osmotic stress-induced polyamine accumulation. ASPP Annual Meeting, Fort Collins, Colorado.

- Flores, H. E.**, A.W. Galston, and N.D. Young. 1983. Putrescine formation by arginine decarboxylase: A stress response in cereal leaves. ASPP Annual Meeting, Fort Collins, Colorado.
- Flores, H. E.**, and A.W. Galston. 1982. Effect of osmotic stress and gravistimulation on polyamine titer and distribution. ASPP Annual Meeting, Urbana, Illinois.
- Flores, H. E.**, and A.W. Galston. 1981. Polyamines in plants: Determination of microquantities by thin layer (TLC) and high performance liquid chromatography (HPLC). ASPP Annual Meeting, Quebec, Canada.
- Flores, H. E.**, and A.W. Galston. 1980. Tissue culture of *Amaranthus* spp. Symposium on Propagation of Higher Plants Through Tissue Culture, Knoxville, Tennessee.
- Flores, H. E.**, R. Kaur Sawhney, and A.W. Galston. 1979. Polyamine action and polyamine oxidase localization in oat mesophyll cells. ASPP Annual Meeting, Columbus, Ohio.
- Flores, H. E.**, and R. Kaur-Sawhney. 1979. Effect of polyamines on macromolecular synthesis and mitosis in oat leaf protoplasts. American Society of Plant Physiologists (ASPP) Annual Meeting, Northeastern Section, Albany, New York.
- Flores, H. E.**, F.K.S. Koo, and C.A. Fierro. 1978. *In vitro* propagation and radiation studies in african violet *Saintpaulia ionantha* Wendl. IAPTC Meeting, Calgary, Canada.
- Flores, H. E.**, and R.E. Smith. 1977. Evaluation of coir dust and other excipients for *Rhizobium* inoculants. Sixth American Rhizobium Conference, Gainesville, Florida.
- Flores, H. E.**, F.K.S. Koo, and C.A. Fierro. 1976. Organogenesis "In Vitro" from thin layer explants of african violet. Amer. Soc. Hort. Sci. Tropical Region Meeting, Mayaguez, Puerto Rico.

INVITED SEMINARS:

- Talks on Agricultural Biotechnology in Latin America, Managua (Nicaragua), October 4-5, 2007 (invited consultant, U.S. State Dept.).
- Talks on Agricultural Biotechnology in Latin America, Guatemala City (Guatemala), October 1-3, 2007 (invited consultant, U.S. State Dept.).
- Talks on Transgenic Crops in Developing Countries. September 30-October 5, 2002, La Paz, Cochabamba, Santa Cruz. Invited Consultant, Dept. of Cultural Affairs, U.S. Embassy in Bolivia.
- Talks on Transgenic Crops in Developing Countries. July 15-18, 2002, Mexico City, Guadalajara, Morelia, Zitacuaro. Invited Consultant, Dept. of Cultural Affairs, U.S. Embassy in Mexico.
- Radicle Biochemistry, North Carolina State University, October 25, 2001.
- Radicle Biochemistry, University of Maryland, Dept. of Cellular & Molecular Biology, College Park, MD, August 31, 2001.
- Grant proposal workshop, University of Maryland, College Park, June 11, 2001.
- Thinking Like a Radicle, California State Fresno, April 19, 2001.
- Thinking Like a Radicle, Purdue University, March 22, 2001.
- To Dye For: Antimicrobial Pigments, Proteins, and Plant Roots. Washington State University, Pullman (WA), March 2, 2001.
- Radicle Biochemistry. University of California, Davis, January 26, 2001
- Radicle Biochemistry: An Underground Perspective from High Above. USDA Plant Gene Expression Center, Albany (CA), January 25, 2001.
- Thinking Like a Root: An Underground Perspective on Life Sciences and Biotechnology. Mississippi State University, November 28, 2000.
- Radical Biochemistry: Specialized Metabolism in Underground Plant Organs. University of Mississippi/USDA-ARS, October 30, 2000.
- Integrating Plant Pathology, Biochemistry and Biotechnology: and Underground View. Texas A&M University, April 18, 2000.

- Rainbows Underground: Interfacing Root Biology, Biochemistry and Indigenous Farmers. Ohio State University. April 6, 2000.
- Biology and Culture of Underground Plant Organs. Howard University (Washington D.C.), November 26, 1999.
- Integrando Conocimiento Tradicional y Moderno Sobre Raices y Tuberculos Andinos. International Potato Center, July 5, 1999.
- On the Integration of Indigenous and Modern Agricultural Knowledge: Thinking Like a Root. University of Minnesota (St. Paul), June 9, 1999
- Radical Biology: The Biology and Culture of Root-Specific Metabolism. Biological Sciences Seminar, Duquesne University, March 19, 1999.
- Thinking Like a Root: Reflections on Plants, People, and Scientists. Botany and Plant Pathology Seminar, Michigan State University, March 1, 1999.
- Integration of Traditional and Modern Agricultural Knowledge. Jardin Botanico, Universidad Nacional Autonoma de Mexico, D.F., February 19, 1999.
- Integration of Traditional and Modern Agricultural Knowledge Centro de Investigacion Cientifica de Yucatan, Merida, Mexico, February 15, 1999.
- The Biological and Cultural Significance of Plant Roots. Plant Breeding Seminar, Cornell University, February 9, 1999.
- Toward an Integration of Indigenous and Experimental Agricultural Knowledge: An Underground Perspective. Geography Seminar, Penn State University, December 11, 1998.
- Thinking Like a Root: The Biology and Culture of Underground Plant Organs;
To Be A Scientist: Notes from the Underground. Seminar series on "Linking Research in Natural Products, Plant Biochemistry", and MBRs/MARC Program, Lehman College (CUNY, New York), May 6-7, 1998.
- Radical Biology and its Future: Connecting Roots, People, and Scientists. Plant Biology Graduate Seminar, University of California (Davis), November 14, 1997.
- To Dye for: Reflections on Roots, Pathogens, Chemicals and People. Plant Pathology Department, University of Arizona (Tucson), October 24, 1997.
- Integrating Modern and Traditional Agricultural Knowledge. Ecology Seminar, Penn State University, March 3, 1997.
- Seeds of Change. STS Seminar, Lehigh University, November 22, 1996.
- Reinventing Biological Literacy. STS Colloquium, Penn State University, October 23, 1996.
- Regulation of Root-Specific Metabolism. University of Rio de Janeiro (Brazil), October 4, 1996.
- Deconstructing a Salad. Science Education Seminar, Penn State University, September 13, 1996.
- Underground Plant Metabolism. 1960 Scholars Lecture, Williams College, April 26, 1996.
- Seeds of Change: Soul Searching in Undergraduate Science Teaching and Training. 1960 Scholars Lecture, Williams College, April 26, 1996.
- Crops from the Past, for the Future. Electronic Classroom Pilot Project, Smithsonian Institution, Washington D.C., March 20, 1996.
- Rutgers University, New Brunswick, February 22, 1996.
- Seeds of Change: Soul Searchings of an Underground Plant Biologist, Department of Biological Sciences, Bucknell University, January 26, 1996.
- Seeds of Change: Soul Searching Through Undergraduate and Graduate Teaching and Training, Botany Department, University of Georgia, Athens, October 9, 1995.
- Insane Roots and Twisted Carrots: Root-Specific Biochemistry and its Regulation, Botany Department, University of Georgia, Athens, October 9, 1995.
- Seeds of Change: Soul Searching Through Undergraduate and Graduate Teaching and Training, Plant Pathology Department, The Pennsylvania State University, August 28, 1995.

- Root-Specific Metabolism: Lighting-up a Black Box, Section of Plant Biology, Cornell University, May 1995.
- Plant Roots as Chemical Factories, Bio-Sidus, Buenos Aires, Argentina, November 18, 1994.
- Of Roots and Radicles: Root-Specific Metabolism and its Regulation, Department of Botany, University of Toronto, Canada, October 21, 1994.
- The Forgotten Roots of Andean Agriculture: Integrating Traditional and Modern Agricultural Knowledge, Plant Physiology Seminar, The Pennsylvania State University, October 19, 1994
- Reflections on Biotechnology and Biodiversity, Keynote Address, 80th Berks County Cooperative Extension Banquet, Leesport (PA), October 17, 1994
- Secondary Metabolism in Root Cultures, Biology Department/MARC-MBRS Program, Cal-State University, Los Angeles (CA), October 7, 1994.
- The Andean Root and Tuber Crops: Realizing the Promise of Forgotten Foods, Biology Department, Goucher College, Baltimore, (MD), September 29, 1994.
- Production of Bioactive Root-Specific Micro- and Macromolecules in Plant Roots, Pfizer R&D, Groton, (CT), July 8, 1994.
- Bitter Cucumbers, Forked Radishes, and Graveyard Yews: Research in Radical Biology, Biotechnology and Biodiversity, Lockwood Lecture, Connecticut Agricultural Experiment Station (New Haven, CT.), May 12, 1994.
- Anti-cancer Compounds and Other Pharmaceuticals from Plants: Studies of Wild Cucumbers, Graveyard Yews and Human Health, Institute of Biosciences and Technology, Texas A&M (Houston), March 25, 1994.
- Seeds of Change, Science Technology, and Society Colloquium, The Pennsylvania State University, March 23, 1994
- Bitter Roots and Forked Radishes: Explorations in Radicle Biology, Department of Biology, California State University (Northridge, CA), March 18, 1994.
- Bioactive Compounds from Plants Roots, MBRS-MARC Biotechnology Program, Interamerican University of Puerto Rico, (San Juan), March 11, 1994.
- Radical Biology: An Interdisciplinary Research and Training Program in Root Biology, Agronomy Department, The Pennsylvania State University, January 28, 1994.
- Bitter Roots and Forked Radishes: Some Thoughts on Radical Biology, Food Science Department, The Pennsylvania State University, December 6, 1993.
- Plant Roots and Ecological Interfaces, University of Washington, Seattle, November 22, 1993.
- Radical Radicles: Exploring the Biosynthetic Potential of Plant Roots. Rutgers University, New Brunswick, NJ, November 12, 1993.
- Radicals and Radicles: The Promise and Challenge of Root Biology, Intercollege Graduate Program in Plant Physiology, The Pennsylvania State University, September 22, 1993.
- Plant Biotechnology Research at Penn State, Dept. of Cellular and Molecular Biology, Novosibirsk State University, Siberia, Russia, July 1, 1993.
- El Potencial Biosintetico de las Racies Vegetales, Catedra de Biotecnologia y Microbiologia Industrial, Universidad de Buenos Aires, Buenos Aires, Argentina, May 4, 1993.
- Las Raices Como Fabricas Fitoquimicas, Universidad Nacional de Cordoba, Facultad de Ciencias Exactas y Naturales, Cordoba, Argentina, May 3, 1993.
- The Biosynthetic Potential of Plant Roots, Purdue University (Lafayette, IN), April 1, 1993.
- Plant Biotechnology Research at Penn State for Biochemistry, Biodiversity and Non-traditional Crops, Interamerican University of Puerto Rico, San Juan, PR, March 19, 1993.
- Radical Biology: Roots as Chemical Factories, St. Johns University (New York, NY), December 7, 1992.

- Radical Biology: Roots as Chemical Factories, Washington State University (Pullman, WA), November 17, 1992.
- In Vitro* Alternatives for Conservation of the Pacific Yew, Explorers Club, New York (NY), November 4, 1993.
- Biotechnology, Biodiversity and Plant Biochemistry, Tropical Studies Symposium, The Pennsylvania State University, October 9, 1992.
- Metabolismo Radical: Las Raices Como Factorias Quimicas, Facultad de Biologia, Universidad de San Marcos, Lima, Peru, May 8, 1992.
- La Biologia Vegetal hacia el Ano 2000, Facultad de Biologia, Universidad de San Marcos, Lima, Peru, May 7, 1992.
- Plant Roots as Chemical Factories, Biology Department, Washington University, St. Louis, April 22, 1992.
- Physiology and Biochemistry of Polyamines in Plant Cells, Biology Department, Washington University, St. Louis, April 22, 1992.
- Underground Metabolism: Secondary Metabolites from Hairy Root Cultures, Dept. of Biological Sciences, Rutgers University Newark, NJ, March 30, 1992.
- Summer Course in Plant Biotechnology, School of Chemistry, University of Sao Carlos (Sao Paulo, Brazil), March 9-13, 1992.
- Underground Metabolism: Exploring the Biosynthetic Potential of Plant Roots. Centre National de la Recherche Agronomique, Versailles, France. 1991.
- Natural Products from "Hairy Roots". Centre Nationale de la Recherche Agronomique, Dijon, France. 1991.
- Perspectives in Underground Botany. Department of Plant Pathology, University of Minnesota, St. Paul (MN). 1991.
- Acetylenes, RIPs and Other Chemical Oddities: Root Metabolism and Plant Pathology. Plant Pathology seminar, The Pennsylvania State University. 1991.
- Catabolism and Secondary Metabolism of Plant Polyamines. Juan March Foundation Symposium. Madrid, Spain. 1991.
- Production of Secondary Metabolites in Root Culture. USDA/ARS Research Station, Philadelphia. 1991.
- Underground Biology: Biosynthetic Potential of Roots. Institut de Recherche en Biologie Vegetale, University of Montreal, Canada. 1991.
- Metabolismo Subterraneo: El. Potencial Biosintetico de la Raices. Instituto de la Grasa y sus Derivados, Sevilla (Spain). 1991.
- Root Cultures as Sources of Commercially Important Plant Chemicals. In Workshop on Cell Tissue and Organ Culture, Centro de Investigacion Cientifica de Yucatan, Mexico. 1990. (**Invited Faculty**)
- Biosynthetic Potential of Plant Roots. Department of Biology, Waterloo University (Canada). 1990.
- Secondary Metabolites in Root Cultures. Department of Pharmacognosy, Purdue University, Lafayette. 1990.
- Underground Metabolism: Production of Secondary Metabolites in Root Cultures. Department of Biology, North Dakota State University, Fargo. 1990.
- Underground Metabolism: Plant Biotechnology and Natural Products. San Jose, Costa Rica. 1989.
- Natural Products from Plant Cell and Organ Cultures. Tissue Culture Meeting. Lima, Peru. 1989.
- Underground Plant Metabolism. Department of Biology, University of Istanbul, Istanbul, Turkey. 1989.
- Underground Metabolism. Plant Pathology Seminar, The Pennsylvania State University, University Park, PA. 1989.

- Secondary Metabolism in "Hairy Root" Cultures. Plant Biology Section, Cornell University, Ithaca, NY. 1989.
- Natural Products from Root Cultures. Biology Department, Williams College, Williamstown, MA. 1989.
- Secondary Metabolites from Plant Cell and Organ Cultures. Center for Molecular BioScience and Biotechnology, Lehigh University, Bethlehem, PA. 1989.
- Underground Chemistry: Exotic Compounds from Plant Root Cultures. Cedar Crest College, Allentown, PA. 1988.
- Secondary Metabolism Underground: Natural Products from Root Cultures. Worcester Polytechnic Institute, Worcester, MA. 1988.
- Twelve lectures at government, industry and university laboratories, on the subject of secondary metabolism in plant cell and organ culture. Sponsored by the Japan Health Science Foundation, Japan. 1987.
- Back to Our Roots: Natural Products from Plant Cell and Organ Culture. The Pennsylvania State University, University Park, PA. 1987.
- New Approaches to the Study of Secondary Metabolism in Higher Plants. Department of Entomology, Louisiana State University, Baton Rouge, LA. 1986.
- Natural Product Synthesis in Tissue Culture Cells. Department of Botany, University of Texas, Austin, TX. 1986.
- Secondary Metabolism in Plant Cell and Organ Cultures. CPC International, Argo, IL. 1985.
- Regulacion del Metabolismo Primario y Secundario de Poliaminas en Plantas. Centro de Investigacion Cientifica de Yucatan (Mexico), Departamento de Genetica y Fisiologia. 1984.
- Physiology and Metabolism of Putrescine in Plant Cells. Department of Plant Biology, University of Illinois, Urbana, IL. 1984.
- Metabolism and Physiological Significance of Polyamines in Plant Cells. Ruhr-Universitat-Bochum, Lehrstuhl fur Pflanzenphysiologie, West Germany. 1984.
- Polyamines in Higher Plants: Basic and Applied Aspects. Department of Vegetable Crops, Florida State University, Gainesville, FL. 1986.
- Polyamine Metabolism and Plant Stress. USDA Western Regional Research Center, Albany, CA. 1984.
- Polyamine Metabolism in Higher Plants: Basic and Applied Aspects. Department of Crop Physiology, Louisiana State University, Baton Rouge, LA. 1984.
- Studies in Polyamine Physiology and Biochemistry in Higher Plants. Department of Plant Molecular Biology, Rockefeller University, New York. 1983.
- Polyamine Physiology in Higher Plants in Relation to Stress Responses. Plant Genetics Group, Pfizer Central Research. 1982.
- Studies on Tissue Culture and Polyamines in *Amaranthus* and other Higher Plants. University of Connecticut, Storrs, CT. 1981.

INVITED PANEL MEMBER/MEETING ORGANIZER:

- Organizer** Annual Meeting of the Phytochemical Society of North America, Merida, Yucatan, Mexico, July 20-24, 2002.
- Member, Site Visiting Team**, Consejo Nacional de Ciencia y Tecnologia, Santiago, Chile, FONDAF Program, September 24-28, 2001.
- Panel Member**, Initiative for Future Agriculture and Food Systems (IFAFS), Panel on Biotechnology 11.3, June 11-12, 2001, Washington, D.C.
- Panel Member**, Multicultural Scholar Program, USDA. Washington, D.C., Nov. 1-2, 2000.

- Member**, Committee of Visitors, review of Graduate Fellowships Program, National Science Foundation, Arlington, VA, June 17-18, 1999.
- Panel member**, Plant Genome Program, National Science Foundation, Arlington, VA., April 14-16, 1999.
- Panel member**, NSF Graduate Fellowship Program, Washington, D.C., February 5-7, 1999.
- Panel member**, USDA/SBIR Program, Plant Protection Panel, Washington, D.C., February 2-3, 1999.
- Panel member**, USDA/SBIR Program, Plant Protection Panel, Washington, D.C., February 2-4, 1998.
- Panel member**, National Science Foundation, Metabolic Biochemistry Program, Arlington, VA, April 23-25, 1997.
- Panel member**, National Science Foundation, Postdoctoral Fellowship Program, Washington, D.C., February 7-9, 1997.
- Organizer**, Annual Penn State Symposia in Plant Physiology, 1990, 1992, 1995, 1997
- Panel member**, USDA, North Central Biotechnology program, Washington, D.C., February 15-16, 1996.
- Panel member**, National Science Foundation, Division of Undergraduate Education, Arlington, VA, January 31- February 3, 1996.
- Organizer**, Mini-Symposium on Teaching and Training, ASPP Annual Meeting, Charlotte (N.C.), July 31, August 4, 1995.
- Panel member**, National Science Foundation, Research Training Grants in Plant Biology, Arlington, VA, Nov. 30-Dec. 1, 1995
- Panel member**, DOE/NSF/USDA Collaborative Research in Plant Biology program, National Science Foundation, Arlington, VA., May 2-3, 1994.
- Panel member**, Bioscience Research Training Groups, National Science Foundation, Arlington, VA., December 16-17, 1993.
- Member**, Biotechnology Research Subcommittee, National Science Foundation, Washington, D.C., November 19, 1993.
- Panel member**, Small Business Innovation Program (Biological Instrumentation), National Science Foundation, Washington, D.C., September 13, 1993.
- Panel member**, Small Business Innovation Program, National Science Foundation, Washington, D.C., September 25, 1992.
- Panel member**, NIH Study Section on Natural Products, Chevy Chase, MD, November 15, 1991.
- Organizer**, Symposium on the Biology of Secondary Metabolism, ASPP Annual Meeting, Pittsburgh, August 1-5, 1992.
- Chairman**, Tropical Studies Symposium on Biodiversity, Conservation and Development, October 9, 1992, The Pennsylvania State University.
- Panel member**, BOSTID/ACTI Panel on Amaranth. National Research Council, National Academy of Sciences, USA. Rodale Research Center, Kutztown, PA. 1981.

IV. SERVICE

SERVICE TO UNIVERSITY (TEXAS STATE):

- Member, selection committee for Mitte Foundation award for Excellence in Research
- Member, ad-hoc committee, review of Faculty Annual Evaluation policy (2007-2008)
- Member, search committee for chair of Agriculture (2006-2007)
- Member, search committee for Director, Honors Program (2006-2007)
- Member, Ad-hoc committee Academic Program Review (2005-2006)

SERVICE TO UNIVERSITY (ARKANSAS STATE):

Member, University Strategic Planning Committee (2003-2005)

SERVICE TO UNIVERSITY (PENN STATE):

Graduate Council Representative, College of Agricultural Sciences (1998-2000)

Member, Faculty Development Committee, College of Agricultural Sciences (1998-2000)

Senior Faculty Mentor, College of Agricultural Sciences (1997-1998)

Member, Advisory Committee on Internationalizing the Curriculum, Office of International Programs (1997-1999)

Panel member, Graduate Recruiting Workshop (Graduate School), September 8, 1997

Faculty Development Workshop on Publishing, Office for Minority Faculty Development (1995-1997)

Member, Promotion & Tenure Committee, College of Agricultural Sciences (1996-1999)

College of Engineering Executive Committee (1996-1999)

Member, International Council Advisory Committee (1996-1997)

Member, Distinguished Faculty Selection Committee, College of Agricultural Sciences (1996-1998)

Member, Advisory Board, Center for Minority & Graduate Opportunities (1995-1998)

Faculty in charge, Plant Pathology Seminars (1995-1996)

Chair, Selection Committee, Distinguished Lecturer in Agricultural Sciences (1995)

Member, Steering Committee, InterCollege Graduate Program in Plant Physiology (1993-1996)

Chair, Research Committee, Plant Pathology Department (1994-1996)

College of Agricultural Sciences representative to Graduate Council (1994-1996)

Mentor, Pennsylvania Governor School of Agricultural Sciences (1989-1992)

Mentor, Minority Summer Research Opportunities Program (1988-present)

Faculty Search Committees (Departments of Biology, Plant Pathology, Horticulture, Biotechnology Institute) (1989-1996)

SERVICE TO PROFESSION:

President, Phytochemical Society of North America, 2001-2002.

Judge, Central California Undergraduate/Graduate Research Exhibition, Cal State Fresno, April 20, 2001.

Grant Proposal Workshop, California State University, Fresno, April 20, 2001.

Grant Proposal Workshop, Universidad Agraria La Molina, Lima, Peru, March 7, 2001.

President, Penn State Chapter, Sigma Xi Scientific Research Society, 1999-2000

Chair, Washington area section, American Society of Plant Physiologists, 1998-1999

Executive Committee, American Society of Plant Physiologists, 1997-1998

Minority Affairs Committee, American Society of Plant Physiologists, 1996-1999
(Chair, 1997-1998)

SERVICE TO PROFESSIONAL JOURNALS:

Scientific Advisor, Electronic Journal of Biotechnology (1997-present)

Associate Editor, In Vitro Cell and Development - PLANT (1996-present)

Associate Editor and Advisory Board, Plant Physiology and Biochemistry (1996-present)

Advisory Board, Plant Physiology and Biochemistry (Jan. 1997 – Dec. 2002)

Review Board, *Phytoremediation: Transformation and Control of Contaminants*
(John Wiley & Sons, 2001).

Member, Editorial Board, Applied Plant Biotechnology and Genetics (1998)

SERVICE TO GOVERNMENT AND COMMUNITY:

Member, Central Texas Technology Executive Education Council (2005-present)

Invited expert, U.S. State Department, Economics, Trade and Global Issues Division; lectures to public and private sector, farmer and business organizations, academic institutions, Guatemala City (Guatemala) and Managua (Nicaragua), October 1-5, 2007.

Invited expert, U.S. State Department, Office of Culture Affairs; lectures at U.S. Embassy in La Paz, Bolivia, Cochabamba, and Santa Cruz, Sept. 30- October 5, 2002.

Invited expert, U.S. State Department, Office of Culture Affairs; lectures at U.S. Embassy in Mexico City, July 15, 2002; lectures at Universidad de Guadalajara, Institute of Food Industry (Guadalajara), City Council of Zitacuaro (Michoacan), Center for Technology Development (Morelia, Michoacan), July 16-19, 2002.

Invited expert, U.S. State Department, Office of Cultural Affairs; lectures at U.S. Embassy in Mexico City, April 9, 2002; keynote speaker at Universidad Nacional Autonoma de Chapingo, April 10.

PROFESSIONAL SOCIETIES:

American Phytopathology Society

American Society of Plant Physiologists

American Association for the Advancement of Science

Sigma Xi Scientific Research Society

Phytochemical Society of North America

Society for Economic Botany

National Association for Science, Technology, and Society

HONOR SOCIETIES AND AWARDS:

Appointment as Visiting Scientist/ Program Director, National Science Foundation, Division of Cellular and Molecular Biology, Oct. 3, 1999 – Oct. 3, 2001

Charles A. Lindbergh Fund Award, 1992

Research Fellowship, Health Science Foundation, Japan, Summer, 1987

Award for Outstanding Presentation, 23rd Annual Symposium, Phytochemical Society of North America (Tucson, Arizona, July 5-8, 1983)

American Cancer Society Summer Fellowship, 1982

Elected to Sigma Xi Scientific Research Society, 1982

American Cancer Society Fellowship, 1981

Grant-In-Aid of Research, Sigma Xi Scientific Research Society, 1981

American Cancer Society Fellowship, 1979

Elected to Honor Society of Agriculture (Gamma-Sigma-Delta), 1977

Organization of American States Training Fellowship, 1975-1977

HOBBIES AND OTHER SERVICE:

Jazz DJ, piano playing, gardening, cooking, poetry writing, literature and music, outdoor activities,
basketball, jogging, stamp collecting.
Volunteer for literacy campaigns and soup kitchens.