In Vitro Report

AN OFFICIAL PUBLICATION OF THE SOCIETY FOR IN VITRO BIOLOGY VOL. 35, NO. 3 • JULY-SEPT 2001

SIVB Honors 3 for Lifetime Achievement

Dr. Ian Freshney, Dr. June Bradlaw, and Dr. Karl Maramorosch

The highest honor given by the Society for In Vitro Biology is the Lifetime Achievement Award. It is presented to scientists who are considered pioneers or highly influential researchers to the science and art of cell culture. They are men and women who have devoted their careers to exemplary research and/or teaching. The recipients of the Lifetime Achievement Award are selected by vote of the Board of Directors from a list of nominations received and recommendation by the Awards Chair. Melissa Hinga was the chairperson for 2001.

The Lifetime Achievement Award was presented to three scientists at the 2001 SIVB Annual Meeting in St. Louis, Missouri. The Awardees were **Dr. June Bradlaw**, **Dr. Ian Freshney,** and **Dr. Karl Maramorosch**. Over the next three issues of In Vitro Report, each of the winners will be highlighted with an article written by the person who prepared the nomination.

This Issue

Notes and Views - Late Summer 2001

Our recent 2001 Congress in St. Louis (16-20 June) was a fast-paced and inspiring event. The opening plenary session was an exciting entree into the scientific program, with the impassioned and motivational presentation first by our keynote speaker, Dr. Roger Beachy of the Donald Danforth Plant Science Center, and next with the stirring wrap-up remarks of one of our strongest advocates on the political front, Senator Kit Bond of Missouri.

The aspect of Dr. Beachy's presentation that touched me the most was his defense of biotechnological advances on moral grounds. We're all quite comfortable with the scientific validity and the stringent regulatory context of biotechnology as it enters the marketplace - and each of us as scientists are frequently called upon to defend biotechnology on these fact-based grounds. Yet quite often, the counter arguments made by consumer activists and other detractors rely on emotional arguments, or are based on issues of morality, i.e. "biotechnology is just wrong, it isn't natural, it just isn't right, period". These kinds of arguments are actually much harder to refute, because they aren't based on fact but on beliefs and a resistance based on 'moral uncertainty'. Yet Dr. Beachy quite powerfully pointed out that to ignore or to revoke the powerful good biotechnology can do for an impoverished world is morally indefensible. He also urged all of us as scientists to be crusaders for this cause and to emphasize the moral basis for what we do. Senator Bond's follow-up remarks further strengthened these sentiments, and he restated his own continuing endeavors to emphasize the overwhelming benefits in the science to the public at every chance. Both Dr. Beachy and Senator Bond have agreed to provide transcripts for future publication in SIVB journals, and we will be honored to have their comments on record.

The SIVB Program Committee came out of St. Louis with firm plans for the program in 2002 (Orlando), which will dovetail with the IAPTC&B Conference next June. The top 3 topics our members wanted to most to explore were 1) Stem Cells, 2) Tissue Engineering, and 3) The Ethics of Stem Cell Research. And in the weeks following our St. Louis conference, just look how these topics have exploded in the media! President Bush is being briefed on moral and ethical issues of the technology and the appropriateness of federal funding, protestors debate that the research (some of which uses human embryonic tissue) is not morally defensible, and celebrity advocates (notably, Mary Tyler Moore, and Christopher Reeves) rebut that it is immoral not to at least try to apply our enhanced scientific knowledge to eliminate our helplessness against human disease and disability. Again, the SIVB is at the forefront of the most controversial current issues, and we have the scientific expertise within our ranks to knowledgeably, thoughtfully address these issues in the public arena. As Dr. Beachy urged, let us be ready and accepting of these upcoming challenges.

Mary Ann Lila Smith
President

Lifetime Achievement Award

June Bradlaw Honored by Society

Dr. June A. Bradlaw, Ph.D., recieved the SIVB Distinguished Lifetime Achievement Award on June 17, 2001, at the Congress on In Vitro Biology in Saint Louis, Missouri. Her nomination was prepared by Dr. Eugene Elmore.

Dr. Bradlaw was a pioneer in her field with many significant achievements and years of exemplary research in the field of cell culture. She received an A.B. degree in Botany from Connecticut College, a Master's degree from the University of Maryland, and a Ph.D. degree from George Washington University School of Medicine. She began her research career in 1958 at the USDA's Agriculture Research Station in Beltsville, MD. In 1965, she joined the Food and Drug Administration (FDA) in a Branch that was to become one of the first laboratories to focus on Genetic Toxicology. She is a member of nine scientific societies.

June Bradlaw

Dr. Bradlaw has been an active member of the Society for In Vitro Biology (Tissue Culture Association) for 35 years and has actively served in many capacities. She was a charter member of the National Capitol Area Branch of the SIVB and has served on various committees since its founding in 1974 including Treasurer of the Branch between 1980-1982 and President between 1982-1984. She was initially elected as Councilor for the Society in 1982 and served on the organizing committee for the 1981 and 1987 Annual Meetings as well as the Decennial Review Conference Committee in 1986. She has served two terms as Secretary of the Society, a member of council and executive board. She was awarded the Society's Distinguished Service Award in 1997. Since 1975, Dr. Bradlaw has played a key role in the Society's ad hoc Toxicity, Carcinogenesis and Mutagenesis Evaluation (TCME) Committee (currently the Cellular Toxicology Section) including serving as Co-Chair for six years.

To enhance her level of understanding of cell culture, she taught a graduate level course in Tissue Cell Culture in the Microbiology Department, The George Washington School of Medicine between 1981 - 1985 as Adjunct Associate Professor of Microbiology and participated in several Specialized Cell Culture Courses at the University of Saskatchewan, Saskatoon, Canada.

Dr. Bradlaw has conducted exemplary research in cell and tissue culture for more than 35 years. She has 79 publications in scientific journals and books, and has actively participated in numerous workshops that have been published in government or other publication modes. She began her cell culture career with studies in genetic toxicology with mammalian cells and human cell lines. She was one of the first to recognize the need to standardize *in vitro* test methods and to develop an agent "data bank" from the results of such standardized tests to facilitate our understanding of chemical agent-induced toxicity and permit the academic science of testing for toxic mechanisms to be extended into the regulatory arena.

Dr. Bradlaw has worked for more than 25 years to improve the science of *in vitro* toxicology and to gain its acceptance by the regulatory agencies both on a national and international level. She was instrumental in promoting the use of *in vitro* methods in toxicology, long before the concept was accepted by the scientific community. Her efforts have played a significant role in the recent changes in government perspectives on validation and acceptance of alternatives.

In her position at the FDA and through interactions with individuals in other federal agencies, Dr. Bradlaw has actively promoted the development and validation of *in vitro* assays to replace the use of the Draize eye corrosivity and irritation assays. As one of the resident experts in her FDA Center, she was selected to co-chair the Interagency Regulatory Alternatives Group's (IRAG) major initiative in evaluating *in vitro* methods for predicting ocular irritation. This international effort began in 1991 and drew on data from industry, academic, and other organizations throughout the world. It also involved close to a dozen US agencies. Her challenge was to establish the organizational framework to collect and evaluate both *in vivo* and *in vitro* data from diverse model systems. In 18 months of constant focus, she worked to successfully overcome both industry and government obstacles and produce the first true international evaluation of its kind (Food and Chemical Toxicology, 35:1-178, 1997).

The success of this effort brought a change in the regulatory agency outlook and contributed directly to the founding of the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) in 1997. This multi-agency center provided the first formal mechanism for introducing new biological test methods into the regulatory arena (across agencies). Recent federal legislative approval of the ICCVAM is illustrative of the many changes that Dr. Bradlaw has worked hard to help facilitate. The ICCVAM and its standards are a lasting testament to her years of work promoting strong *in vitro* science within the FDA.

In 1997, Dr. Bradlaw received the FDA Group Recognition Award for her activities as a member of the Interagency Regulatory Alternatives Group for advancing the development of non-animal alternative methods. Over numerous years, she has volunteered much of her free time to review *in vitro* testing programs such as those for the National Cancer Institute's Division of Cancer Prevention and has recognized the significance of the gains made from such program-focused efforts.

Since her retirement from the FDA, Dr. Bradlaw has continued her efforts to promote the development and acceptance of alternatives to animal testing. She currently chairs the Science Advisory Board for the International Foundation for Ethical Research. In this voluntary role, she promotes the advancement of alternatives by helping to award scholarships for deserving students, attends national and international scientific meetings, and interacts with governmental agencies. She also serves on the American Society for Testing and Materials (ASTM) committee F04 on Medical & Surgical Devices, Division IV Tissue Engineered Medicinal Products to include writing standards for use of Cell, Tissue and Organ Processing in these products. She has repeatedly demonstrated her commitment to education, the *in vitro* sciences and the Society for In Vitro Biology.

Through her continuing efforts and persuasive approaches, Dr. Bradlaw has inspired the growth of the field and has influenced the careers of many individuals. She has thought of herself as a facilitator, contributing unselfishly to help others to

achieve shared goals in *in vitro* toxicology. She has freely given her time and expertise to support the field and to encourage scientists in the society, industry and government to consider *in vitro* systems. In addition, she has promoted the concept that *in vitro* systems should be considered not only as alternatives to animal testing but as having the potential for providing scientifically sound data that are more relevant to human safety than data from standard animal tests. Dr. Bradlaw's continued efforts have helped to promote its acceptance of *in vitro* toxicology by the scientific and regulatory community.

June Bradlaw at the 2001 Congress with Peggy Cunniff and Peter O'Donovan from IFER.

In addition to her scientific achievements, Dr. Bradlaw recently published her first children's book, entitled "Tree Bear's Adventures in Learning," about an adventuresome bear, who promotes forest conservation while facing the problems learning to communicate with the real world. This entertaining book was illustrated by her uncle, Harry Rossoll, the creator of the legendary "Smoky Bear."

"I would like to thank the SIVB for bestowing this great honor. I also feel humbled by sharing the stage with my distinguished colleagues, Drs. Freshney and Maramorosch.

Long ago, I found that the SIVB, Tissue Culture Association, would provide the scientific base for my dreams, plans, and projections for the future of In Vitro Toxicology. The Society of Toxicology didn't want me. In 1975, I presented a paper at their meeting that described a bioassay to detect low levels of dioxin-related chemicals using a rat hepatoma cell line. I remember distinctly when an animal toxicologist came up to me after the presentation, shook his finger in my face and said, "You'll never replace the animal!" Well, that was the wrong thing to say to me, but I wondered why he seemed so fearful of a cell culture presentation at a Toxicology meeting. In those days, I never thought about replacing animals, but to use the emerging science of cell culture to help plan subsequent studies for safety evaluations. We were using the animal studies to determine human safety. Why not incorporate a cell culture component in these assessments and explore the use of cultured human cells and other target organ cells?

Coincidentally, in 1974, Roland Nardone and Mike Waters asked me to join the new ad hoc Toxicity, Carcinogenesis, and Mutagenesis Toxicity Testing Committee of the TCA and to help plan, speak at, and edit two subsequent conferences which were held in 1975 and 1976 on the current status of In Vitro Testing in these areas. Historically, these conferences were the first of their kind in the work especially in the area of General Cytotoxicity Testing.

Those two events helped motivate me to find out under what conditions could cells replace animal tests, especially in the regulatory testing area.

While the European Community galloped forward to take the lead in In Vitro Toxicology, it wasn't until the formation of ICCVAM in 1994 that any national initiative occurred in the United States.

What did I do in those frustrating intervening 20 years? Starting in 1975, I wrote numerous proposals to my Division Director outlining the strategy for the use of cultured cells to the future of Toxicology. Every year those proposals became longer and more detailed and included an education component to teach animal toxicologists about cells and tissue culture because that was the basis for the success of the program. However, it wasn't until 1984 that I received the official sanction to form an In Vitro Toxicology Team and then I was given people with no experience in cell culture.

I also needed to know more about my field. A break came when I was asked to teach a graduate level Tissue Culture Course at George Washington University, which I did after working hours for 5 years in the early 1980's. Dr. Fedoroff also invited me to teach at his specialized tissue culture courses at the University of Saskatchewan in the summer where I could hone my skills. Dr. Fedoroff, Joe Leighton, and others in the TCA were a constant source of knowledge, encouragement, and inspiration through the years. This society always had the reputation of spawning people who were willing to share information or direct you to a colleague who could. I have tried to continue that tradition and hope that every one of you will do the same. This, I believe, makes our Society unique.

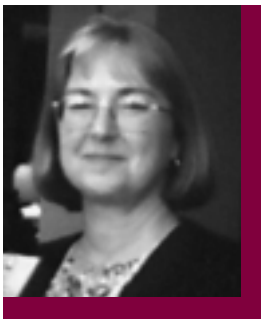
I have been lucky to have been able to do research in a field that I love. I truly miss those early morning examination of cultures in the incubator. If more people would take the time to do this, they would truly understand the power of observation and appreciate the dynamic beauty of a living cell. If you listen very closely, the cells will often talk to you.

I have learned to have infinite patience. Now, when I attend meetings of the Society of Toxicology, most of the cutting-edge research presented there incorporates a cell culture component as well as a molecular one. I often overhear lamenting comments about the reduced animal studies and chuckle. I try to be humble and not say, "I told you so."

I am touched and delighted by this award from a Society that never said you can't achieve your dreams."

Nomination packets for the 2002 Lifetime Achievement Award are required to be submitted to the Awards Chair no later than January 5, 2002. The nomination packet must include the nominee's Curriculum Vitae, a letter of nomination and two additional letters of recommendation. Any other supporting material is welcome. The nominator must secure a donation of $1500 to defray the cost of giving the award. A letter from the donor acknowledging their contribution must be included in the nomination packet. The nominator is also required to collect materials for a poster for display at the SIVB annual meeting on the achievements of the nominee. Please send nomination packets to the Awards Chair, Melissa Hinga, by email: mhinga@ricetec.com or by mail: Ms. Melissa Hinga, RiceTec, Inc., PO Box 1305, Alvin, Texas 77512

Distinguished Service Award



Elizabeth J. Roemer

The Distinguished Service Award is presented to those, selected by the SIVB President, who have demonstrated and given extra effort in support of the SIVB programs and endeavors.

The 2001 Distinguished Service Award was presented at the Annual Meeting to **Elizabeth J. Roemer**. Liz Roemer is a Long Island, NY native and is currently a Senior Research Scientist and Lecturer in the Departments of Pathology and Biochemistry & Cellular Biology at the State University of New York at Stony Brook. Liz received her B.A. in biology from State University College at Buffalo and graduated with distinction from Hofstra University with a M.A. in Biology in 1987. She began working as a Research Assistant at SUNY Stony Brook in 1984 and was promoted to Senior Research Scientist in 1992. Since 1994 Liz has also been a Consultant for Cell Based BioAssay Design and Extracellular Matrix Synthesis and has managed and conducted several clinical trials.

Liz works in inflammation and metastasis with primary emphasis on proteinases and inhibitors. She has extensive experience in *in vitro* and cell based assay development as well as cell-matrix interactions. In 2000 Liz co-authored a chapter "Evaluation of the phototoxic potential of chemically modified tetracyclines using the 3T3 neutral red assay" in the book *Progress in the Reduction, Refinement and Replacement of Animal Experimentation* edited by M. Balls, A-M. van Zeller and M.E. Halder. Liz is currently involved in the discovery and pharmaceutical development of novel anti-proteolytic compounds for diseases including cystic fibrosis, ARDS, and prostate cancer. This research has resulted in several patents, including "Serine Proteinase Inhibitory Activity By Hydrophobic Tetracycline" (6/30/98). Liz is an associate editor of *Methods of Tissue Engineering*, edited by A. Atala and R.P. Lanza and currently in press by Academic Press, San Diego.

In addition to research, Liz is actively involved in science education. She is a member of the steering committee and has served as Acting Director for Stony Brook's renowned Women in Science and Engineering Program. She has a large and active group of undergraduate students working with her in the laboratory, 6 of whom have presented posters at the annual SIVB meeting during the past 4 years. The lab has also hosted numerous high school students, whose research has resulted in several Westinghouse finalists and semifinalists.

A member of SIVB since 1993, Liz is currently serving the Society as Treasurer (2000-2002). Liz has also held many other elected and appointed positions including Secretary (1996-98), Chair-Elect (1998-2000) and currently Chair (2000-2002) of the Vertebrate Section. She served as Chair of the Research Investigator Awards Program (1996-1998) and Chair of the Awards Committee (1998-2000). She is currently serving as Chair of the Education Committee (1999-2002) and is an active member of the Program Planning Committee. Liz has also convened several sessions at the annual meeting including: "Examining mechanisms of metastasis *in vitro*" (1997), "The role of cell-ECM interactions in epithelial cell morphology and function" (1998), "Expression of the malignant phenotype: the role of cell-cell and cell-matrix interactions" (1999) and "Mechanical determinants of cell form and function" (2000). Liz has also represented the SIVB at the 1998 NASA meeting: "Pillars of Biology Initiative: Biomedicine" and is an SIVB member of ASTM, SectionF04, Division IV: Tissue Engineered Devices. Liz is a member of the American Society of Cell Biology, the Microscopy Society of America and the New York Academy of Sciences.

President Mary Ann Lila Smith presented Liz with the Distinguished Service Award at the Plenary Session of the 2001 Congress in St. Louis, Missouri.

From the Constitution and Bylaws Committee

On behalf of the C&B Committee, the membership of SIVB is thanked for their input in the development of the amendments to the Constitution and Bylaws and for their overwhelming vote in support of the final product.

The most important intent of the amendments was to make it easier for members to become active in the SOCIETY. In addition, this Committee welcomes new members. All that is necessary is to send an e-mail to hguttman@starpower.net.

Helene N. Guttman
Chair

Nominations for 2002-2004 Executive Board and Committee Chairs

The recent changes to the SIVB Constitution and By Laws has opened up the nomination process to all members and changed the appointed Committee Chairs to elected positions. The Nominations Committee prepares the final slate, but each member has the opportunity to self-nominate for any position. If you are interested in any officer or committee position, please send a brief biographical sketch and a platform statement of your vision for the goals for the office to the Nomination Committee Chair or one of the section representatives.

Delia Bethell, Chair drbethell@aol.com
Chuck Armstrong, Plant Rep.
Charles.l.armstrong@monsanto.com
Ray Hakim, Invertebrate Rep rhakim@fac.howard.edu
Dennis Laska, Toxicology Rep DALPSU@Lilly.com
Liz Roemer, Vertebrate Rep eroemer@path.som.sunysb.edu

Elected Positions to serve on the Executive Board

- President Elect 2 years, Chair of Strategic Long Range Planning Committee
  2 years, President
  2 years, Past President, Chair of Nominations Committee
- Vice President 2 years, Chair of Development Committee
- Editor of In Vitro Report
- Secretary 2 years, Chair of Membership Committee
- Treasurer 2 years, Chair of Finance Committee
- 1 - Member-at-Large 2 years, Short term to correct cycle
- 2 - Member-at-Large 4 years
- Publications Chair 2 years
- Public Policy Chair 2 years

Elected Committee Positions not serving on the Executive Board

- Awards 2 years
- Constitution & ByLaws 2 years
- Educations 2 years
- Lab Materials & BioSafety 2 years

2001 SIVB Student Awards

The following student awards were presented at the 2001 Congress on In Vitro Biology, St. Louis, Missouri. **Sang-Un Park**, University of Calgary, Calgary, Alberta, received the John S. Song Award for his presentation Development of plant regeneration and genetic transformation in the *Papaveraceae* for the metabolic engineering of benzylisoquinoline alkaloids. **Denise Fraga**, University of Notre Dame, South Bend, Indiana, received the Cellular Toxicology Award for her paper entitled Three-dimensional transgenic model for genotoxic assesment using macro porous cultispheres. The Wilton R. Earle Award was given to **Bushra Sadia**, University of Nottingham, Nottingham, U.K., for the presentation Somatic hybrids of *Solanum tuberosum* cv. Desiree and S. chacoense Bitt: A baseline for disease resistance in potato. **Miriam Kundt** of the University of La Plara, Buenos Aires, Argentina, was presented the Honor B. Fell Award and an SIVB travel award for her Study of embryonic ploidy: a probable embryo model. The Hope E. Hopps Award was presented to **Hideka Kobayashi,** University of Illinois, Urbana, Illinois, for his study Extraction and detection of kavapyrones from *in vitro* cultures of kava (*Piper methysticum Foster*). SIVB travels awards were given to **G. Franklin**, Indian Institute of Science, Bangalore, India for High efficiency transformation of egg plant (*Solanum melongena L.*) and to **G. Ravi Kumar**, Indian Agricultural Research Institute, New Delhi, India for Development of intergenic hybrids in crop Brassicas via embryo rescue and somatic hybridization. *Information related to the available specific student awards can be found on the SIVB Web site (www.sivb.org) or by contacting the SIVB Office at (301) 324–5054, sivb@sivb.org or Dr. Gertrude Buerhing, Chair, Student Affairs & Awards, (510) 642-3870, buehring@ulink4.berkeley.edu.*

Student Travel Award

G. Ravi Kumar

Development of Intergeneric Hybrids in Crop Brassicas via Embryo Rescue and Somatic Hybridization.

Many wild allies of crop brassicas in the *Brassica* coenospecies, group are potential donors of desirable nuclear and organelle encoded characters. To enlarge the genetic base for productivity traits and also for specific attributes like disease and pest resistance, tolerance to abiotic stress, specialty components of quality attributes and male sterility, the nuclear and organelle genes in the wild relatives of the cultivated species are of critical value. Efforts were made to develop novel genetic stocks in crop brassicas using sexual and somatic hybridization. Intergeneric hybrid between *Erucastrum caraminoides* (Webb ex Christ) O. E. Schulz (n=9), a wild species and *Brassica nigra* (Dwarf) (n=8) was obtained through ovary culture. Two somatic hybrids namely, *Diplotaxis gomez-campoi* (n=9) + *Brassica nigra* (Dwarf) (n=8), *Sinapis pubescens* (n=9) + *Brassica nigra* (n=8) were obtained following protoplast fusion. Hybridity of all of the hybrids was confirmed through RAPD and Isozyme markers. Molecular analysis was carried out for the cytoplasmic organelles to ascertain the mitochondrial and chloroplast status and chromosome analysis to study the meiotic behavior of these hybrids. These promising hybrids can act as a bridge species for transferring new genes from wild to crop species. *G. Ravi Kumar, National Research Center on Plant Biotechnology, Indian Agricultural Research Institute, Pusa Campus, New Delhi – 110012, INDIA. E-mail: grk_mbio@yahoo.com, In Vitro Cellular and Developmental Biology 37: 44-A, 2001.*

John S. Song Foundation Award

Sang-Un Park

Development of Plant Regeneration and Genetic Transformation in the Papveraceae for the Metabolic Engineering of Benzylisoquinoline Alkaloids

We have developed the useful protocols of plant regeneration, genetic transformation and hairy root culture system in the Papaveraceae, which include the opium poppy (*Papaver somniferum L.*) and *California poppy* (Eschscholzia Cham.) for metabolic engineering in benzylisoquinoline alkaloid biosynthesis. Procedures have recently been developed in our laboratory for 1) Rapid protocol for high-efficiency somatic embryogenesis and plant regeneration from seed-derived embryogenic callus cultures of California poppy, 2) Improved somatic embryogenesis using embryogenic suspension cultures of California poppy, 3) An efficient Agrobacterium-mediated protocol for the stable genetic transformation of California poppy via somatic embryogenesis, 4) an efficient Agrobacterium-mediated protocol for the stable genetic transformation of intact opium poppy plants via shoot organogenesis, 5) The protocol for the establishment of transgenic opium poppy and California poppy root cultures using *Agrobacterium rhizogenes*, and 6) Metabolic engineering of benzylisoquinoline alkaloids in transgenic California poppy cell cultures. Modifications of cell secondary metabolism by genetic engineering may be important in producing higher levels of benzylisoquinoline alkaloids in California poppy cells. We present preliminary results from initial attempts to metabolically engineer benzylisoquinoline alkaloid biosynthesis in transgenic cell cultures. California poppy cell cultures show that cell lines transformed with constitutively expressed sense-BBE (berbine bridge enzyme), from opium poppy display an intense red-brown color compared to control cultures transformed with a 35S::GUS construct. In contrast, cell lines transformed with constitutively expressed antisense BBE from California poppy show virtually a complete loss of red-brown color. The benzophenanthridine alkaloids that accumulate in California poppy are typically orange to red in color; thus, our observations suggest that cell lines transformed with the sense – BBE construct accumulate more of these alkaloids, wheras cell lines transformed with anitsense-BBE accumulate little, if any, of the normal profile of benzophenanthirdine alkaloids. Our continuing research is focused on the development and characterization of this, and other, genetically-mediated metabolic manipulations of benzylisoquinoline alkaloid pathways in a variety of plant species. *S.-U. PARK, Department of Biological Sciences, University of Calgary, Calgary, Alberta T2N 1N4, CANADA. Email: spark@ucalgary.ca. In Vitro Cellular and Developmental Biology 37:44-A, 2001.*

Journal Highlights

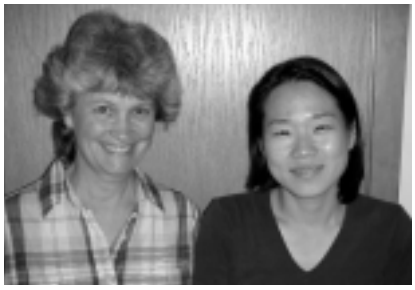
Biotech Breakthroughs for Phytoremediation

Phytoremediation, or the use of plants for removal and detoxification of environmental pollutants, has garnered great attention in recent years. This heightened interest is both scientifically, due the fascinating processes utilized by plants for tolerance and removal of harmful compounds, and commercially, as plants represent a more environmentally compatible and less expensive method of site remediation compared to standard approaches. The majority of phytoremediation studies have been with naturally occurring plant species after empirical discovery of their exceptional abilities for such applications. This has led to a growing body of literature and wider acceptance for plants in many aspects of environmental rehabilitation. However, this has occurred with little understanding of their basic biological mechanisms of action or investigation of alternative strategies for enhancing the capabilities of these extraordinary plants. Better understanding of plant physiology, biochemistry, and molecular biology in response to specific contaminants is critical for optimization and advancement of phytoremediation. By applying the tools of biotechnology, the potential for plants as an aggressive method of environmental decontamination may be realized. This paper will serve as an introduction to the first Symposium assembled exclusively to review the use of molecular genetic and biotechnological methods for improvement of plants for phytoremediation. After a brief review of the other invited speakers' works (with more extensive papers following), the pioneering work using bacterial genes expressed in plants for removal of mercurial compounds will be surveyed. ***Clayton L. Rugh**, Mercury Detoxification with Transgenic Plants and other Biotechnological Breakthroughs for Phytoremediation. In Vitro Cellular and Developmental Biology – Plant 37: 321 –325, 2001*

Expression of Foreign Genes in Plants

With an ever-increasing frequency, it has become desirable to express many foreign genes in the same transgenic plant. A range of approaches to this problem have been explored in the period since gene transfer was developed as a useful tool in plant science. These have ranged from assembly of multiple transcription units on a single DNA vector, to the execution of several independent transformations involving single genes followed by successive rounds of hybridization to yield plant lines with the desired combination of genes, to cotransformation with multiple plasmids followed by molecular screening to identify desired transgenic plants. Recent developments have provided new alternatives to the problem of the expression of multiple foreign genes in plants, approaches that revolve around the expression of polycistronic mRNAs. This review summarizes the current status of the area of polycistronic gene expression in transgenic plants, within the context of multigene expression. ***A. G. Hunt** and **I. B. Maiti,** Strategies for Expressing Mutliple Foreign Genes in Plants. In Vitro Cellular and Developmental Biology – Plant 37: 313 – 320, 2001*

Transformed Root Border Cell Release Pattern



Border cells from Artemisia annua were examined from hairy roots grown in shake flasks, culture plates, a bubble column reactor, and a nutrient mist (aeroponic) reactor. When well hydrated roots were subjected to shear, border cells were first released as an agglomerate and did not disperse for several hours. Staining with neutral red and fluorescein diacetate (FDA) showed that both agglomerates and dispersed cells were alive. It was determined that FDA is cleaved by PME and that PME may not be particularly active in the released agglomerates until the border cells disperse. Untransformed roots isolated from A. annua plants showed no border cell agglomerate formation and border cells readily dispersed. These results suggest that our hairy root clone is deficient in border cell release perhaps resulting from the transformation process. ***P. J. Weathers** and **Y. J. Kim**, Transformed Roots of Artemisia annua Exhibit an Unusual Pattern of Border Cell Release, In Vitro Cellular and Developmental Biology – Plant 37: 440 – 445, 2001.*

Sucrose Enhances Phoshoenolpyruvate Carboxylase Synthesis in Potato Plantlets

The effect of sucrose on in vitro potato (cv. Kennebec) metabolism was evaluated. Plants were grown in three different media: Murashige and Skoog basal medium containing high nitrogen concentration with 0 g L-1 or 20 g L-1 sucrose; or modified medium containing reduced nitrogen amount and 20 g L-1 sucrose. Plants fed with 20 g L-1 sucrose and high N exhibited higher phosphoenolpyruvate carboxylase (PEPC) and pyruvate kinase activities and high PEPC protein concentration at 7, 20 and 33 d of culture compared to those grown with 20 g L-1 sucrose and low N, or with 0 g L-1 sucrose and high nitrogen (control). The highest accumulation of starch and sucrose was found in plants grown with sucrose and low nitrogen. This accumulation occurred concomitantly with a reduced enzyme activity resulting from a low utilization of a-ketoglutarate by nitrogen assimilation, when plants were grown with reduced nitrogen. Our investigations on tricarboxylic acid cycle activity showed that sucrose led to the reduction of organic acid amounts in both leaves and roots when high nitrogen was supplied to plants. This was probably due to the intense exit of a-ketoglutarate, which was confirmed by measurements of cytosolic isocitrate dehydrogenase activity. The low leaf glutamine/glutamate ratio observed in plants grown with 20 g L-1 sucrose and high nitrogen compared to their counterparts cultivated with low nitrogen might be due to glutamine conversion into proteins when nitrogen assimilation was intense. These results demonstrate that sucrose enhanced PEPC activity by increasing protein synthesis. They also suggest that sucrose metabolism is involved in the replenishment of tricarboxylic acid cycle by providing carbon skeletons required to sustain phosphoenolpyruvate utilization during high nitrate assimilation. ***B. D. Sima**, Y. Desjardins, and L. Van Quy, Sucrose Enhances Phosphoenolpyruvate Carboxylase Activity of In Vitro Solanum tuberosum L. Under Non Limiting Nitrogen Conditions, In Vitro Cellular and Developmental Biology – Plant 37: 480 – 489, 2001.*

Invertebrate Highlights

Rather than highlight specific journal articles, the editor of IVCDB - Animal, Wally McKeehan, and the In Vitro Report editor have chosen to highlight some invertebrate papers presented at the San Diego meeting. The following synopsis was contributed by Cindy Goodman, Marcia Loeb, and Ray Hakim.

Cynthia Goodman

Marcia Loeb

The 10th International Conference on Invertebrate Cell and Tissue Culture was held jointly with the 2000 World Congress on In Vitro Biology June 10-14, 2000, in San Diego, CA. Ten presentations from this conference are in the process of being published in two upcoming issues of In Vitro Cell. Devel. Biology (Animal). These papers represent submissions from 4 sessions: "Strategies for Culturing Cells from Fastidious Invertebrates" (**Karl Maramorosch** and **Cynthia L. Goodman**, conveners), "Insect Midgut" (**Marcia Loeb**, convener), "Insect Hormones" (**Renée Wagner**, convener), and "Recombinant Protein Production in Insect Cells" (**Amy Wang**, moderator). We have chosen to highlight one paper from each session that exemplifies the work performed in the respective research areas.

During the symposium on "Strategies for Culturing Cells from Fastidious Invertebrates", papers were presented on cell culture establishment techniques and media development results from a variety of invertebrate species. Full discussions of these presentations are given in three upcoming papers in In Vitro: "Novel Techniques to Establish New Insect Cell Lines" by **Dwight Lynn** (USDA, ARS, IBL), "Development of Highly Nutritive Culture Media" by **Jun Mitsuhashi** (Dept. of Biosciences, Tokyo University of Agriculture), and "Hemolymph analysis and evaluation of newly formulated media for culture of shrimp cells (*Penaeus stylirostris*)" by **Chisato Shimizu** and his colleagues from Jane Burns' laboratory, Department of Pediatrics, School of Medicine, University of California-San Diego. The results from the two papers dealing with insect cell cultures are in contrast to those of the latter paper involving marine invertebrates, from which no continuously growing cultures have been developed to date. The establishment of cell cultures from marine organisms is important for a number of reasons, including the development of measures for the control of pathogens of economically important shrimp, as well as the development of novel pharmaceuticals from sponges. In the upcoming In Vitro issue, Chisato Shimizu and his coworkers begin to tackle this problem by using approaches developed by insect cell culturists in the 1950's and 1960's coupled with more modern biochemical techniques. Their paper, entitled "Hemolymph analysis and evaluation of newly formulated media for culture of shrimp cells (*Penaeus stylirostris*)", describes a thorough analysis of the components of shrimp hemolymph and how these data can be used to optimize culture media for shrimp cells. Their initial studies produced promising results from a morphological viewpoint, although culture longevity still needs improvement. Dr. Burns has additionally been involved in research, which she detailed in the 2000 symposium, dealing with the development and use of pantropic retroviral vectors to encourage cell proliferation.

The 2000 conference included two sessions involving the production of recombinant proteins in insect cells. In one of these sessions, **Laertis Ikonomou** and his colleagues from Spiro Agathos' laboratory, Centre for Systems Engineering and Applied Mechanics, Laboratory of Cellular Biochemistry, University of Louvain, presented results from their latest studies in two important areas for insect cell culture mass production, namely the optimization of cell culture medium and the replication of cells in microcarrier culture systems. A publication for In Vitro was prepared from the former studies and is entitled "Design of an Efficient Medium for Insect Cell Growth and Recombinant Protein Production." This paper describes the development and use of a new medium for the production of insect cells in bioreactor batch cultures. Their data indicate that cells grown in this new medium undergo a prolonged stationary phase and are able to produce high levels of recombinant proteins. Thus, this new media may prove to be useful for the production of large quantities of specific proteins.

"Insect Hormones" was a topic for one session, with two papers being published in In Vitro from this session: "Regulation of Corpora Allata in Female of *Pyrrhocoris apterus* (Heteroptera) (a mini-review)" by **Magdaléne Hodková** (Institute of Entomology, Czech Academy of Sciences, Ceske Budejovice) and her collaborators, and "Ecdysone-Inducible Foreign Gene Expression in Stably-Transformed Lepidopteran Insect Cells" by **Shuichoro Tomita** of the Department of Insect Genetics and Breeding, National Institute of Sericultural and Entomological Science, Tsukuba, Japan, and his collaborators. This latter paper describes the incorporation of marker genes into ecdysone-responsive cells in such a way as to produce ecdysone-inducible foreign proteins. The development of this stable foreign gene expression system paves the way for the engineering of other cell-based systems that can be manipulated to produce specific proteins in the presence of the insect hormone ecdysone.

The symposium on the "Insect Midgut" generated 4 papers for publication in In Vitro, including "The Role of Stem Cells in Midgut Growth and Regeneration" by **Raziel Hakim** (Dept. of Anatomy, Howard University) and his colleagues, "Control of Life, Death and Differentiation in Cultured Midgut Cells of the Lepidopteran, *Heliothis virescens*" by **Marcia Loeb** (USDA, ARS, IBL) and her coworkers, "Cockroach Midgut Peptides that Regulate Cell Proliferation, Differentiation and Death In Vitro" by **Makio Takeda** (Graduate School of Science and Technology, Kobe University) and his collaborators, and "Primary and Continuous Midgut Cell cultures from *Pseudaletia unipunctata* (Lepidoptera: Noctuidae)" by **Juan Garcia** and his colleagues from Robert Granados' laboratory at Boyce Thompson Institute, Cornell University. In the latter paper, the authors describe a means for making a midgut epithelial cell line from the armyworm, *Pseudaletia unipunctata*, that would survive at least 6 passages *in vitro*, or approximately two years. Columnar, goblet and stem cell types present in mature midgut epithelium *in vivo* were observed in the cultures. The cells grew slowly in TNM-FH medium containing heparin and 20-hydroxy-ecdysone and seemed to show cycles of proliferation of stem cells, maturation and cell death. Yeast-like symbiots that accompanied these cells in culture seemed neither to aid nor hinder development. Columnar and goblet cells could be readily infected with an insect virus (AcMNPV) indicating that the cells can be used as models to study events in insect virus infection in vitro.

Points To Ponder

The use of rare genes in germplasm collections has become increasingly feasible as biotechnologies come of age. Transformation is becoming more routine for most crops, while the advent of marker-assisted selection now allows breeders to deploy desirable genes without linkage drag. Nevertheless, our increased ability to use germplasm collections comes at a time when germplasm is no longer viewed as a common resource for the benefit of mankind, but as property of the originating country, thus limiting the availability of germplasm resources for research and plant improvement. Furthermore, the use of germplasm resources has inevitably been mixed in with the current debate on GMOs, whereby the use of germplasm is now called "biopiracy" by some. Dr. Pamela Ronald has pioneered innovative efforts to cut through the Gordian knot that is currently limiting the use of germplasm. Here, she explains her efforts.

—*Wayne Parott*

Genetic Resources Recognition at the University of California, Davis

Pamela Ronald, Professor – Department of Plant Pathology
Stephen Brush, Professor – Department of Human and Community Development

◗ Genetic resources have become more valuable as biotechnology has provided improved means with which to assay and use them and because of limits to their availability posed by habitat change, such as deforestation in the Amazon and modernization of traditional agricultural systems. One response has been to create and expand conservation efforts. At the same time, increased value has engendered a wide-ranging debate on equitable sharing of the costs and benefits of genetic resources. This debate has focused on access to genetic resources and economic returns to using them. The essence of the debate is that industrial countries are the primary users and economic beneficiaries of genetic resources that are "produced" in the South. Moreover, the lack of financial benefit in the South for maintaining genetic resources contributes to their erosion and destruction. An apparent solution to this disparity is to provide some mechanism for balancing equities between North and South – access to genetic resources and financial benefits from using them.

◗ The effort to find means toward the goal of balancing equities is now more than 20 years old and shows little progress, despite the increasing value and loss of genetic resources. Perhaps the longest lived (but not yet completed) effort is the "International Undertaking on Plant Genetic Resources" at the Food and Agricultural Organization (FAO) of the U. N., dating from the early 1980s. The 1992 Convention of Biological Diversity proposed an international framework for balancing equities, by stipulating national sovereignty over genetic resources and promoting open access, *in situ* conservation and sharing of benefits from their use. US government agencies such as the National Institutes of Health, National Cancer Institute, National Science Foundation and US Agency for International Development have supported a program of "bio-prospecting" projects that combine access to genetic resources and short- and long-term benefits for indigenous people who provide those resources, including royalty sharing. Several private ventures, most famously the Merck In/Bio contract follows a similar pattern.

◗ In spite of the aims of these public and private efforts, there is still no widely accepted mechanism for balancing equities in the flow of genetic resources and financial benefits from their use. Bio-prospecting is an ad hoc approach that has not always been acceptable to the inhabitants of areas where collecting occurs. Bio-prospecting is vilified by some as "bio-piracy." The Convention on Biological Diversity is now funded through the Global Environmental Facility (GEF) of the World Bank, UNDP and UNEP, but this is an indirect mechanism to balance equities in the international flow of genetic resources. The unsuccessful debate at the FAO is symptomatic of the daunting task of negotiating an international framework to resolve the imbalances between areas that maintain and provide genetic resources and areas that use them in biotechnology industry. Anecdotal evidence suggests that the international flow of germplasm has been drastically reduced because neither countries nor their rural people are eager to provide genetic material.

◗ An alternative to indirect international support and bio-prospecting contracts for balancing equities is to develop specific mechanisms and agreements between scientific and commercial institutions that use genetic resources and providers of those resources. One variant of this approach is the Genetic Resources Recognition Fund (GRRF), developed at the University of California, Davis. This is based on two premises: 1) it is important to both the UC and sources of genetic resources that financial recognition to sources be made, and 2) an equitable and effective system for financial recognition must reach beyond specific communities and provide a means for long-term benefit. The first premise concerns continued access of genetic resources from non-industrial countries and equity concerns raised in the international dialog about biological resources. The second premise concerns the need to find a mechanism to meet the goals of access and equity.

◗ The GRRF was developed to provide a mechanism to recognize the providers of genetic resources of *Oryza longistaminata* a wild rice species from Mali that carries resistance against the bacterium *Xanthomonas oryzae* pv. oryzae ('Xoo'). The genetic resource followed a circuitous but typical route from Mali to Cuttak India to IRRI in the Philippines to Cornell University to the University of California, Davis. Professor Pamela Ronald cloned and transferred the Xa21 gene into cultivated rice, *O. sativa*, and the University of California patented the gene in 1994.

◗ At Professor Ronald's urging, the University of California Davis agreed to establish a special fund, the Genetic Resources Recognition Fund, based on licensing fees for use of the gene. Professor Ronald conducted the negotiations with two companies interested in access to Xa21, with help from John Barton, a Professor of Law at Stanford University and UC Office for Technology Transfer. Given the novelty of benefit-sharing arrangements in partnerships to develop new crops, few if any of the major actors involved in this case study had much experience with such negotiations and there was little prior experience to learn from. The negotiation process lasted from the autumn of 1994, when discussions between UC Davis and the companies started, to January 1997, when an option to license agreement was signed with the second company.

New Educational Biotech Website

The SIVB Education Committee, chaired by **Elizabeth Roemer**, is developing a website to highlight the education activities of SIVB. The committee's goal is to provide continuing education to members, and biotechnology outreach programs to K-12 teachers and the general public. A resource page will be included which lists relevant workshops, useful websites, scientists who are willing to serve as mentors for local schools, etc. If you would like to announce your upcoming workshops, add your name to a list of potential mentors, or have success stories on how you have provided outreach education to schools or community groups, please send them to the site webmaster, **Carol Stiff**, kck@turbonet.com. We are also open to suggestions for improving the site and welcome those comments. The site will be available soon via the SIVB website. If you want to see a "draft" copy, contact Carol and she will provide the temporary address. Your input on this is greatly appreciated.

2001 Student Science and Engineering Fair Award Winners

Listed below are the high school Science and Engineering Fair winners who received SIVB certificates and letters of recognition for projects related to the areas of in vitro biology.

Adam Pollock, Osceala High School, Kissimmee, FL
Sheena Howell, Wildwood High School, Wildwood, FL
Summer Young, Wildwood High School, Wildwood, FL
Marcia Natsis, Springstead High School, Spring Hill, FL
Renee Skandaliaris, Springstead High School, Spring Hill, FL
Victor Quijada, San Vicente de Paul, Tarma Jonin, PERU
Michael Spertus, Spruce Creek High School, Ormond Beach, FL
Amanda Fidler, Terrebonne High School, Houma, LA
Kjirsten Swenson, Dickinson High School, Dickinson, ND
Brandon Cavallaro, Nease High School, Ponte Vedra Beach, FL
Ryan Chapman, Nease High School, St. Augustine, FL
James Rees, Lincoln Park Academy, Pt. St. Lucie, FL
Shovan Kasem, Lake Highland Preparatory, Orlando, FL
Jennifer Evanson, Alexander Public High School, Alexander, ND
Candace Palmer, Westover High School, Albany, GA
Destiny Leach, Roy Jr. High, Roy, UT
Brooke Bowman, Roy Jr. High, Roy, UT
Karen Ballard, Weber High School, Ogden, UT
Leah Robinson, Bagley High School, Clearbrook, MN
Andrew Soucie, Hildreth High School, Upland, NE
Ashley Askew, Griffin High School, Griffin, GA
Stephen Myers, Bay High School, Panama City, FL
Elissa Masson, Citrus High School, Inverness, FL
Jennie Aamodt, Buena High School, Sierra Vista, AZ
Philip Powell, Terre Haute South Vigo High School, Terre Haute, IN
Anand Atreya, Huron High School, Ann Arbor, MI
Paul Jansen, East Noble High School, Kendallville, IN
Tyler Latta, Gage High School, Gage, OK
Julie Noble, Yorktown High School, Arlington, VA
Bonnie Grant, Walhalla High, Walhalla, SC
Sarah Wacker, Perham High School, Perham, MN
Katharine Meinhover, Perham High School, Perham, MN
Emily Welles, , Douglass High School, Coral Springs, FL
Marjarie Stoneman, Douglass High School, Coral Springs, FL
Anne Luna, Faith Temple Christian School, Portales, NM
Jennie Davis, West Shore High School, Merrit Island, FL
Ankur Shukla, Columbia High, Lake City, FL
Lindsey Brough, Boone Grove High School, Crown Point, IN
Daniel Goodman, Shades Valley High School, Birmingham, AL
Jaime JIrele-Borleske, Winona Senior High School, Winona, MN
Angela Celis, Niceville High School, Niceville, FL
Kevin Alexander, Jefferson County International Baccalaureate, Birmingham, AL
Christopher Ammen, Pam Bay High, Palm Bay, FL
Carrie Bosley, Paoli High School, Paoli, IN
Joshua Breaux, John Ehert High school, Marrero, LA
Milena Pastore, Monte Vista High School, Monte Vista, CO
Stephen Hedges, Andnean HS, Crown Point, IN
Derek Perry, Farmington, NM
Grant Yost, Jefferson High School, Lafayette, IN
Andrew Templin, Jefferson High School, Lafayette, IN
Samuel Chang, LBJ, Austin, TX
Mark Kaganovich, Bloomington High School North, Bloomington, IN
Brian Fisher, Mandan High School, Mandan, ND
Alexander Anosov, St. Petersburg High School #371, St. Petersburg, RUSSIA
Tricia Paddilla, Grants High School, Elko, NM
Maya Frommer, Whitney Young, Chicago, IL
Avielle Hardre', West Liberty High School, Nichols, IA
Carrie Anderson, North DeSoto Middle School, Stonewall, LA
Lacey Holtzclaw, North DeSoto Middle School, Stonewall, LA
Lindsay Chura, Academy of the Holy Names, Sligerlands, NY
William F. Bryant, Yazoo City High School, Yazoo City, MS
Mahon William, Advanced Technologies Academy, Las Vegas, NV
Kristina Root, Alma High School, Alma, AR
Depika Shukla, Miami Palmetto Senior High School, Miami, FL
Katherine Daring, Billing West High School, Billings, MT
John Broque, Lakeveiw High School, Columbus, NE
Alisha Lange, Lehman Catholic High School, Piqua, OH
Nick Jumblatt, Ballard High School, Louisville, KY
Adam Gorod, Academic Magnet High School, Charleston, SC
Larissa Hansmeier, Bristal School, Bristal, SD
Dominique Perez, Deming High School, Deming, NM
Shanno George, Woodlin R-104, Brostt, CO
Megan Schmitiz, B & B High School, Baileyville, KS
Amanda Shanner, York Country Day School, York, PA
Sara Bruce, Elmire High School, Veneta, OR
Sean Bartlinski, Walkersville High School, Walkersville, MD
Aaron Crapster, Walkersville High School, Walkersville, MD
Pankrusky Nikolay, High School #29, Minsk, REPUBLIC OF BELARUS
Patricia Reed, North Dariess High School, Oldon, IN
Heather V. Love, Danbury High School, Danburg, CT
Sarah A. Grodzick, Mercy High School, Meriden, CT
Erica Washington, St. Joseph's Academy, Baton Rouge, LA
Karen L. Beckman, Jamestown Senior High School, Jamestown, ND
Christina Mattmuller, Nicolet High School, Fox Point, WI
Arielle Hardré, Home schooled, Nichols, IA
Allison Collins, Beaufort Academy, Beaufort, SC
Nick Jumblatt, Ballard High School, Louisville, KY
Megan Roberts, Carlble High School, Carlble, PA
Luis L. Diez, Colegio Santiago Apostal, Fajardo, Puerto Rico
Marly James, Lafayette High School, St. Joseph, MO
Eric Nolley, Amherst High School/Central Virgina Governis School, Amherst, VA
Jermaine Brown, Mustang High School, Mustang, OK
Henry Andrews, Kennett High School, Kennet, MO
Rebecca Maxwell, Lausanne Collgrate School, Memphis, TN
Kathryn Battle, Hutchison School- 11th, Tunica, MS
Brain Sydney, Delavan High School, Delavan, IL
Doug Lowry, Delavan High School, Delavan, IL
Kate Felak, Ephrata High School, Stevens, PA
Nathaniel Hickman, Coldspring -Oakhurst High School, Coldspring, TX
Anv pana Kotha, King High School, Tampa, FL
Kathleen Cummings, Ridgewood High School, Bayonet Point, FL
Sevan Abashian, Madsion, Oakton, VA
Chris Scheina, Madison, Vienna, VA
Olawunmi Fajobi, Herndon, Herndon, VA
Kevin Draper, Thomas Jefferson, Fairfax, VA
Calvin Ngo, Oakton, Herndon, VA
Amrita Lalvani, Oakton, Fairfax, VA

ExPlants

The 2001 SIVB Annual Meeting was another in a long string of outstanding conferences. If you were there, you know what I mean. If you weren't, you missed one of the great Plant Programs as well as possibly the most inspiring speech I've ever heard from Senator Christopher (Kit) Bond (R Missouri). Roger Beachy was at his best as well and the Plenary exceeded even the highest expectations.

Of course, next years meeting will be held in conjunction with the IAPTC&B in Orlando, Florida. The last time The IAPTC&B held their conference in the US (1986 Minneapolis), our field of endeavor was just beginning to blossom. 15-16 years later our business is being attacked from several fronts, we are engaged in a fight for the hearts and minds of people the world over. Senator Bond urged us to keep fighting the good fight and not to let our enthusiasm waver!

Now for news!

Chuck Armstrong, Vice President of the Plant Section and a Monsanto scientist, and his wife (Ginger Peschke) had their first-born on July 17, a son, Matthew Dean Armstrong, weighing 5 lbs 12 oz and 18 1/2 inches long. Our congratulations to the proud parents!

Melissa Heatley married Tom Hinga on May 26 and became a step-mom to Allie and Erin Hinga. Melissa Hinga will remain with RiceTec as Tissue Culture Manager and her new email is mhinga@ricetec.com

In April, **Mary Ann Lila Smith**, SIVB President, was awarded the prestigious Paul A. Funk Recognition Award, the College of Agricultural, Consumer and Environmental Sciences, Univ. of Illinois. She received the award for her impressive record of scholarly output and innovation. Mary Ann has recently been appointed the interim head in the Department of Natural Resources and Environmental Sciences. She also was awarded a NIH Botanical Centers Grant (based at Purdue with project director Dr. Connie Weaver). They will investigate the role of polyphenolic compounds in neuroprotection. Linda Kull has joined Mary Ann's lab as a post-doc. Her primary focus is bioflavonoids from black soy lines *in vitro* and *in vivo*. Gad Yousef has joined Mary Ann's lab as a post-doc. He will investigate component interactions between flavonoids or carotenoids in functional food crops and in vitro cultures.

Martie Wright retired April 30, 2001, after nearly 14 years, from Syngenta in RTP. Previously, she had worked for Monsanto in St. Louis for 25 years. She is busy planning and arranging a move to a suburb of Kansas City, Overland Park, KS, to be near her family. She can be reached at KCWrightM@aol.com and 913-648-5622. Congratulations to Martie for a long and distinguished career! We hope she will continue to be an active member of the SIVB and the Plant Section.

A little corporate news: Aventis and Schering AG agreed and announced that for the weeks to come the negotiation process concerning the potential divestment of Aventis CropScience will be continued exclusively with Bayer AG. For more information, see their respective websites. **Todd Jones** has left the East Coast behind and has joined Weyerhaeuser in Seattle WA. Todd's new e-mail address is Todd.Jones@weyerhaeuser.com.

Barbara Reed received a 3 year grant from the USDA Foreign Agricultural Service, Scientific Cooperation Research Program to study "Critical Point Evaluation of Cryopreservation Protocols for Plant Germplasm Conservation." Drs Barbara Reed (USDA Agricultural Research Service) and Erica Benson (University of Abertay Dundee) will analyze problems involved in the transfer of cryopreservation technology to other laboratories. Tissue culture scientists in Scotland, Poland, Kazakhstan, and Germany with no cryopreservation experience will receive a 2-week training in cryopreservation techniques. Drs. Reed and Benson will analyze the implementation of the procedures and the experimental results to determine the critical points at which difficulties occur in technology transfer.

—Mike Horn
mhorn@prodigene.com

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SciNEWS

AIBS ENDORSES FASEB STATEMENT SUPPORTING STEM CELL RESEARCH - The AIBS Board of Directors has endorsed the Federation of American Societies for Experimental Biology's (www.faseb.org) statement on stem cell research. That statement reads:

"The leadership of the Federation of American Societies for Experimental Biology (FASEB) affirms its continued support for research on human embryonic stem cells. We continue to endorse the National Institutes of Health (NIH) draft guidelines for this research and applaud the agency for its forward-looking stance in regards to the issues. The careful efforts of the Working Group of the NIH Advisory Committee resulted in guidelines that will facilitate the research necessary to realize the future medical benefits of human embryonic stem cells while preserving the dignity of human donors and respecting the unique ethical sensitivity of these cells.

"FASEB is composed of 21 societies with more than 60,000 members, making it the largest coalition of biomedical research associations in the United States. The Federation exists to serve the interests of biomedical and life scientists, particularly those related to public policy issues. Our membership includes many researchers interested in and qualified to conduct research on embryonic stem cells.

"The momentous possibilities of medical research at this frontier of experimental biology make it imperative that embryonic stem cell research continues to move forward. Because embryonic stem cells are able to form all of the cell types of the body, understanding how to control their differentiation could lead to novel therapies for presently untreatable diseases. Thus, embryonic stem cell research promises to have an enormous impact on the health and longevity of people everywhere."

NEUROTOXICOLOGY AWARDS OFFERED BY SOT - The Society of Toxicology announces the availability of the Early Career Award in Neurotoxicology. This award, sponsored by the American Chemistry Council, provides up to $100,000 support to encourage persons beginning their professional careers to conduct research on topics that will improve the scientific basis for risk assessment and decision making with respect to the potential neurotoxicity of chemicals. Scientists with research interests in neurotoxicology and full-time faculty positions at accredited North American institutions granting graduate degrees are eligible. Complete description and the application are found at http://www.toxicology.org/Information/AwardsFellowships/awardsponsored.html#accean. Deadline is October 9, 2001.

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In Vitro Report

Future Meetings

SIVB MEETINGS

2002 – (Plant Members) June 23-28, International Association for Plant Tissue Culture and Biotechnology (IAPTC&B), Orlando, FL. Contact the IAPTC&B Congress Secretariat, Society for In Vitro Biology, 9315 Largo Drive W, Suite 255, Largo, MD 20774, (301) 324-5054, fax (301) 324-5057, email: sivb@sivb.org.

2002 – (Invertebrate, Vertebrate, and Toxicology Members) June 26-29, Congress on In Vitro Biology, Orlando, FL

2003 – May 31-June 5, Congress on In Vitro Biology, Portland, OR

OTHER MEETINGS

2001 – November 4-7, American College of Toxicology 22nd Annual Meeting, Renaissance Washington DC Hotel, Washington, DC. For more information, contact: (301) 571-1840, fax (301) 571-1852, email: ekagan@actox.org.

2001 – October 21-25, American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition, Denver, CO. For more information, contact: (703) 243-2800, fax (703) 243-9650, email: aaps@aaps.org.

2002 – April 1-6, Cell Culture Engineering VIII, Snowmass, CO. For more information, contact (212) 591-7836, fax (212) 591-7441, or visit the conference website at http://www.engfnd.org/engfnd/2AC.html.

PENN STATE BIO TECHNOLOGY COURSES

2001 – October 2-5, Fermentation Methods and Scale-up Strategies

2001 – October 16-19, Separation and Purification Strategies for Biotechnology Products

For course information, call the program office at (814) 863-1918 or call 800-PSU-TODAY to receive a brochure and registration materials for the short courses or any Penn State biotechnology program. For up-to-date information, please visit, http://www.cde.psu.edu/biotechnology.

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IN VITRO REPORT (ISSN 1077-3975) is published quarterly, one volume per year, by the Society for In Vitro Biology (SIVB) 9315 Largo Drive, West, Suite 255, Largo, MD 20774. The subscription non-member rate is $40 per volume ($55 outside the USA). payable in advance in U.S. funds drawn on a U.S. bank. SIVB members receive IN VITRO REPORT as part of annual dues. Claims of nonreciept should be made within 6 months of publication. Issues claimed after 6 months may be purchased as back issues and should be directed to IN VITRO REPORT. Periodicals postage paid at Upper Marlboro, MD, and additional mailing offices. POSTMASTER: SEND ADDRESS CHANGES TO IN VITRO REPORT, 9315 Largo Drive, West, Suite 255, Largo, MD 20774.