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UPCOMING EVENTS

Conference on **"Convergence of Agricultural Genetics and the Land Grant Mission: Emerging Trends in the Application of Genomics in Agricultural Research"** at **Purdue University**, September 10-12, 2006.
For info: www.entm.purdue.edu/conference

PIPRA roundtable workshop on **"Global Strategy for Collaborative Management of IP in Agricultural Research"**, Bellagio, Italy, September 5-7, 2006

MARK YOUR SCHEDULE NOW:

PIPRA 2007 Annual Member's Meeting, San Francisco, March 7, 2007 (Immediately prior to AUTM 2007)

PIPRA, The Public Intellectual Property Resource for Agriculture, is an organization committed to the strategic management of intellectual property owned by universities and not-for-profit research institutions, encouraging the broadest applications of existing and emerging agricultural technologies for the development of subsistence crops for developing countries and specialty crops in developed countries.

www.pipra.org

Towards an IP resource for Southeast Asia

This summer PIPRA began an assessment of the IP management needs of agricultural research institutions in Vietnam. Laurel Kilgour, a law student at the University of Minnesota interning with PIPRA, traveled to Vietnam and gathered information on IP awareness and capacity through a series of surveys and interviews. She visited 14 universities and institutes, including the **Institute of Biotechnology** (Hanoi), the **Agricultural Genetics Institute** (Hanoi), **The National Maize Research Institute** (Ha Tay).

Vietnam began its market-oriented reforms in the mid-1980s and the economy has recently been gathering momentum (growing 8.4% in 2005). Vietnam is now a major competitor in the export of coffee, the world's largest exporter of pepper, and may soon rival Thailand in the export of rice. Until recently, universities were not permitted to engage in commercialization of research, nor researchers to register for intellectual property protection as individuals. Change is coming with a new IP law enacted in July 2006, intended to bring Vietnam into compliance with TRIPs as it vies for membership in the WTO. As in other developing countries, these changes can bring both uncertainty and new opportunities for the use of intellectual property.

For Vietnamese institutions, PIPRA has the

potential to provide a unique resource that works toward fostering a better understanding of how agricultural intellectual property can best be employed to serve the individual needs of universities and agricultural research institutions. PIPRA's broad membership base, network of affiliated institutions, portfolio of member technologies, capacity for legal analysis, and molecular biology labs now constitute a deep reservoir of professional skill.

PIPRA is exploring possibilities for establishing a regional "IP resource" in Vietnam that will make PIPRA's services more locally accessible and designed to address local needs. Such a resource will offer technical assistance in IP management, work toward the reduction of transaction costs in the transfer of technology, and provide information and education.



In July PIPRA intern Laurel Kilgour visited 14 research institutions throughout Vietnam (map), including the National Maize Research Institute in Ha Tay near Hanoi (photo), to survey how IP is currently understood and utilized in public sector agricultural research.



A New PIPRA Member in Vietnam

The Institute of Agricultural Genetics (AGI) of the Ministry of Agriculture and Rural Development, in Hanoi, joined PIPRA shortly after Ms. Kilgour's visit. Dr. Le Huy Ham, Vice-Director of AGI indicates that the government has targeted agricultural biotechnology as a national priority, and has committed substantial funding through 2010. Major focuses include development of large-scale micropropagation technology, application of genetic engineering to plant and animal breeding programs (with an emphasis on rice, root crops, and vegetables), and the development of biotechnology related to environmental protection and reforestation.

PIPRA's lab work shifts into high gear: Developing plant transformation vectors with an eye on IP

PIPRA Biotechnology Resources: PIPRA's Biotechnology Resources Laboratory is situated within the **UC Davis** Department of Plant Sciences and already employs a staff of five. The program's multidisciplinary activities straddle the delicate junction between science, law, business development, and regulatory affairs necessary for the research and development of new agricultural innovations in both developed and developing countries. PIPRA's **Biotechnology Resources** activities include developing research tools with maximum freedom-to-operate to support a wide array of agricultural applications for humanitarian and commercial purposes, facilitating technology transfer, building new partnerships and research collaborations, and providing legal information on plant biotechnology tools. The laboratory's work interacts intrinsically with the IP work done at PIPRA and by its affiliated law schools and *pro bono* legal counsel.

PIPRA's laboratory, in collaboration with researchers from PIPRA-member universities, is developing a **plant transformation system** designed to address legal, regulatory, and consumer considerations. The pPIPRA plant transformation vector system will incorporate technically proven, plant-derived components and marker-free strategies. PIPRA will design, develop and test the transformation system in model monocot and dicot plant systems before making the transformation tools available. The pPIPRA transformation system is funded by a \$600,000 grant from the **Rockefeller Foundation** to help ensure global access to improved crops.

Since 2005, The California Department of Food and Agriculture-Pierce's Disease Control Program has awarded PIPRA a total of \$280,000 to provide IP support and to develop **enabling technologies for grape transformation**. The research consortia funds research projects and program activities that address the Pierce's Disease threat to the grape and wine industries as well as other commercial crops like citrus, almonds, peaches, plums, alfalfa, and numerous ornamentals plants.

New research scientists: PIPRA's laboratory team is working to reconcile laboratory bench strategies with intellectual property issues. As a research scientist at PIPRA, **Tamara Holst**'s main focus is the development of the pPIPRA vector suite and accompanying transformation protocols. Tamara holds a Ph.D. in Biochemistry and Molecular Biology, with a designated emphasis in biotechnology, from UC Davis. For her graduate work she elucidated the driving forces behind close, stable homologous chromosome juxtaposition during meiosis in *S. cerevisiae*. After completing her graduate work, and prior to joining PIPRA, she worked for about a year at the Calgene Campus of **Monsanto Co.** in Davis. **Victor Haroldson** is a graduate student in Biochemistry and Molecular Biology at UC Davis working on a pilot project to improve the nutritional quality of horticultural products like tomatoes for developing countries. He works on ascorbic acid biosynthesis and transient assays in fleshy fruits to study combinatorial effects of up or down regulating groups of genes. Prior to joining UC Davis, worked at **Gemini Life Sciences** on clonal asexual seed production traits in major food crops.

Invitations to collaborate: PIPRA invites collaboration from researchers, growers' associations, research consortia, firms interested in developing transformation tools, and pilot research projects for specific crop species in the US and abroad.



Tamara Holst joins PIPRA as research scientist.



Victor Haroldson joins PIPRA as a graduate student researcher.

Summer interns from Sweden work on IP of plant promoters and stem cells

Fredrik Fredh spent nine weeks this summer as an intern at PIPRA utilizing his joint knowledge of biotechnology and IP law to develop a plant promoter database for PIPRA. It is designed to be an online resource where scientists can find both biological and legal information regarding specific plant promoters. In addition, he developed a condensed format for presenting freedom-to-operate information on plant promoters, and co-authored a case study for the forthcoming MIHR-PIPRA *Handbook on IP Management*. Fredrik is a graduate student in the Bioscience Business Creation program of the **Gothenburg International Bioscience Business School (GIBBS)** at the **Center for Intellectual Property (CIP)** in Gothenburg, Sweden, and holds a previous degree in bioengineering. Fredrik can be contacted at fredrik@fredh.net.



Fredrik Fredh and Karl Bergman from the Center for Intellectual Property (CIP) in Sweden add to the strength of the PIPRA team this summer. Such visitors and interns are very welcome at PIPRA, providing additional expertise and a channel for IP outreach.

Karl Bergman likewise joined PIPRA for a summer internship to examine whether a collaborative public IP organization, similar to PIPRA, might be feasible for promoting innovation in stem cells. His work has focused around assembling a stem cell patent database with about 10,000 documents, analyzing the database, and collecting anecdotal evidence in order to determine whether there is a developing anti-commons problem in stem cell research. Karl is also a student at the **Gothenburg International Bioscience Business School (GIBBS)** at the **Center for Intellectual Property (CIP)** in Gothenburg, Sweden, and holds a previous degree in bioengineering. Karl is involved there in a public-private initiative to build a chemical biology screening facility in Gothenburg and Oslo. His summer project on stem cells was funded by CIP. Karl can be contacted at karl.bergman@cip.chalmers.se.



PIPRA's Evaluation of the BiOS License

The success and power of opens source (OS) licensing in software and its ability to spark a new production model – distributed peer production – has stimulated the development of parallel models for biological innovations. However, translating the OS license model from copyrights to patents is not direct, largely because of the high cost of prosecuting and maintaining biotechnology patents as compared to copyrights. In agricultural biotechnology, **BiOS** (www.bios.net) has developed a model for open source licensing of enabling technologies for plant transformation.

PIPRA evaluated the BiOS license in order to incorporate one of the BiOS enabling technologies (Transbacter™) into PIPRA's plan to develop a plant transformation system with maximum freedom-to-operate. Over the course of several months, PIPRA staff, University of California staff (where PIPRA is hosted), and several outside attorneys examined the BiOS license through the lens of the public research community, the non-profit institutions, and universities involved and their legal, scientific, and policy practices. The analysis identified several features of the BiOS license that were incompatible with the PIPRA project. The problematic terms included:

1. A very broad definition of "improvements" that would be obligated to be "granted back" to the BiOS enabling-technology pool. Under this pro-

vision, if a researcher created a plant transformation vector with a single BiOS enabling technology among many components, the entire vector system (a "plant enabling technology" by definition in the BiOS license) must be granted back to BiOS.

2. The BiOS license contains language requiring that the licensee's obligations "will in no way be waived, modified, negated, or otherwise diminished due to [the licensee's] contractual obligations to third parties." In PIPRA's case, as in many academic projects, our research plan involved the incorporation of several other technologies, some of which came with IP obligations that could not be honored under this provision.

We concluded that the terms of the BiOS license were neither feasible nor desirable for PIPRA to sign as a licensee, largely because it did not allow even the testing of multiple proprietary components in conjunction with a BiOS enabling technology. In the context of the PIPRA enabling technology project, the BiOS license would actually restrict innovation because it does not have provisions to work in conjunction with existing IP regimes characterizing most public research centers nor does it have provisions to support non-commercial research. The BiOS license may be compatible with other research situations, and we encourage you to contact PIPRA staff for more information on the details of our analysis.

New Applications and Patents by PIPRA Members

US20060090221, April 27, 2006, Washington State University, Desaturases and methods of using them for synthesis of polyunsaturated fatty acids

US20060107349, May 18, 2006, The Samuel Roberts Noble Foundation, Increased wax production in plants

US20060107353, May 18, 2006, Agri-Food Canada, Plant bioreactors

US20060166244, July 27, 2006, University of Missouri, DNA markers for increased milk production in cattle

US20060172329, August 3, 2006, University of Missouri, DNA markers for cattle growth

US20060174370, August 3, 2006, University of Kentucky, Genetic insulator for preventing influence by another gene promoter

US20060174371, August 3, 2006, Cornell University, Synthetic nucleic acid molecule for imparting multiple traits

7,034,205, April 25, 2006, Salk Institute, Genetically modified plants having modulated brassinosteroid signaling

7,038,113, May 2, 2006, The Samuel Roberts Noble Foundation, Genetic manipulation of isoflavonoids

7,049,485, May 23, 2006, Michigan State University, Transgenic plants containing ligninase and cellulase which degrade lignin and cellulose to fermentable sugars

7,052,905, May 30, 2006, University of Kentucky, Methods and composition for expressing multiple genes in plants by alternate splicing of a polycistronic message

7,053,265, May 30, 2006, Michigan State University, Application of bi-directional promoters for modification of gene expression

7,056,743, June 6, 2006, The Samuel Roberts Noble Foundation, MtHP promoter element

7,057,090, June 6, 2006, Rutgers University, Agrobacterium-mediated transformation of turfgrass

7,060,874, June 13, 2006, University of California, Bioengineering cotton fiber properties

7,071,377, July 4, 2006, Cornell University, Method to control the ripening of papaya fruit and confer disease resistance to papaya plants

7,078,586, July 18, 2006, Cornell University, Papaya ringspot virus genes

7,081,564, July 25, 2006, Agri-Food Canada, Plant fatty acid desaturases and alleles therefor

7,084,321, August 1, 2006, Cornell University, Isolated nucleic acid molecules relating to papaya fruit ripening

Current PIPRA Member Institutions

1. Agriculture and Agri-Food Canada
2. Arizona State University, represented by Arizona Technology Enterprises LLC
3. AVRDC, The World Vegetable Center, Taiwan
4. Boyce Thompson Institute
5. CIMMYT, International Maize and Wheat Improvement Center, Mexico
6. CIP, International Potato Center, Peru
7. Cornell University
8. Donald Danforth Plant Science Center
9. Fundación Chile, Chile
10. Institute of Agricultural Genetics, Vietnam
11. Iowa State University
12. IRRI, International Rice Research Institute, Philippines
13. Kansas State University
14. Michigan State University
15. North Carolina State University
16. Ohio State University
17. Oregon State University
18. Parco Tecnologico Padano, Italy
19. Purdue University
20. Salk Institute
21. St. Augustine University of Tanzania
22. Samuel Roberts Noble Foundation
23. State University of New Jersey, Rutgers
24. University of Arizona
25. University of Arkansas, Division of Agriculture
26. University of California-Berkeley
27. University of California-Davis
28. University of California-Riverside
29. University of Florida
30. University of Georgia Research Foundation
31. University of Idaho
32. University of Kentucky
33. University of Missouri-Columbia
34. University of Saskatchewan, Canada
35. University of Tennessee
36. University of Wisconsin, represented by Wisconsin Alumni Research Foundation
37. Virginia Tech, College of Agriculture and Life Sciences
38. Washington State University

PIPRA's 2005-6 Executive Committee

Gerard Barry, International Rice Research Institute (IRRI), g.barry@cgiar.org

John Byatt, University of Florida, jbyatt@rgp.ufl.edu

Lisa Lorenzen, Iowa State University, llorenze@iastate.edu

Henry Lowendorf, Yale University, henry.lowendorf@yale.edu

Irvin Mettler, University of California-Berkeley, imettler@berkeley.edu

Chair: Karel Schubert, Donald Danforth Plant Science Center, kschubert@danforthcenter.org

**Nominations for the
2006-7 Executive Committee
are still being accepted.**

Please e-mail or phone your
submission.

PIPRA Contact Information

Alan Bennett, Executive Director
abbennett@ucdavis.edu
+1 (530) 754-1411

Sara Boettiger, Director,
Information and Analysis
sboettiger@ucdavis.edu
+1 (530) 754-6725

Cecilia Chi-Ham, Director,
Biotechnology Resources
cchiham@ucdavis.edu
+1 (530) 754-6717

Gregory Graff, Director,
Education and Outreach
gdgraff@ucdavis.edu
+1 (530) 752-2705

Josef Geoola, IP Analyst
jngeoola@ucdavis.edu
+1 (530) 752-2705

Tamara Holst, Research Scientist
tlpholst@ucdavis.edu
+1 (530) 752-9096

Ben Xiong, IT Specialist
benxiong@ucdavis.edu
+1 (530) 753-7568

PIPRA
Plant Reproductive Biology Building
Extension Center Drive
University of California
Plant Sciences, Mail Stop 5
Davis, CA 95616-8780



*PIPRA's offices and laboratory at the
University of California, Davis*

Tel: +1 (530) 754-6717
Fax: +1 (530) 752-2278