

## Biology 115 2007

### Plant Biotechnology Reading List

#### **Biopolymer production in plants:**

Mohanty, A. K., Misra, M. and Drzal, L. T. (2002). Sustainable Bio-Composites from Renewable Resources: Opportunities and Challenges in the Green Materials World. *Journal of Polymers and the Environment* 10, 19-26.

Kim, S. and Dale, B. E. (2005). Life Cycle Assessment Study of Biopolymers (Polyhydroxyalkanoates) Derived from No-Tilled Corn. *International Journal of Life Cycle Assessments* 3, 200-210.

Kourtz, L., Dillon, K., Daughtry, S., Peoples, O. P. and Snell, K. D. (2007). Chemically inducible expression of the PHB biosynthetic pathway in Arabidopsis. *Transgenic Res* 16, 759-69.

#### **TCE Bioremediation:**

Newman, L. A. and Reynolds, C. M. (2004). Phytodegradation of organic compounds. *Curr Opin Biotechnol* 15, 225-30.

Shang, T. Q., Doty, S. L., Wilson, A. M., Howald, W. N. and Gordon, M. P. (2001). Trichloroethylene oxidative metabolism in plants: the trichloroethanol pathway. *Phytochemistry* 58, 1055-65.

Doty, S. L., James, C. A., Moore, A. L., Vajzovic, A., Singleton, G. L., Ma, C., Khan, Z., Xin, G., Kang, J. W., Park, J. Y. et al. (2007). Enhanced phytoremediation of volatile environmental pollutants with transgenic trees. *Proc Natl Acad Sci U S A* 104, 16816-21.

#### **Allergenicity of transgenic plants:**

Lehrer, S. B. and Bannon, G. A. (2005). Risks of allergic reactions to biotech proteins in foods: perception and reality. *Allergy* 60, 559-64.

Sinagawa-Garcia, S. R., Rascon-Cruz, Q., Valdez-Ortiz, A., Medina-Godoy, S., Escobar-Gutierrez, A. and Paredes-Lopez, O. (2004). Safety assessment by in vitro digestibility and allergenicity of genetically modified maize with an amaranth 11S globulin. *J Agric Food Chem* 52, 2709-14.

Herman, E. M., Helm, R. M., Jung, R. and Kinney, A. J. (2003). Genetic modification removes an immunodominant allergen from soybean. *Plant Physiol* 132, 36-43.

#### **Genetic containment strategies:**

Lee, D. and Natesan, E. (2006). Evaluating genetic containment strategies for transgenic plants. *Trends Biotechnol* 24, 109-14.

Kuvshinov, V., Anissimov, A. and Yahya, B. M. (2004). Barnase gene inserted in the intron of GUS—a model for controlling transgene flow in host plants. *Plant Science* 167, 173-182.

Lannenpaa, M., Hassinen, M., Ranki, A., Holtta-Vuori, M., Lemmetyinen, J., Keinonen, K. and Sopanen, T. (2005). Prevention of flower development in birch and other plants using a BpFULL1::BARNASE construct. *Plant Cell Rep* 24, 69-78.

### **Drought resistance:**

Umezawa, T., Fujita, M., Fujita, Y., Yamaguchi-Shinozaki, K. and Shinozaki, K. (2006). Engineering drought tolerance in plants: discovering and tailoring genes to unlock the future. *Curr Opin Biotechnol* 17, 113-22.

Chandra Babu, R., Zhang, J., Blum, A., David Ho, T. H., Wu, R. and Nguyen, H. T. (2004). HVA1, a LEA gene from barley confers dehydration tolerance in transgenic rice (*Oryza sativa* L.) via cell membrane protection. *Plant Science* 166, 855-862.

Fujita, Y., Fujita, M., Satoh, R., Maruyama, K., Parvez, M. M., Seki, M., Hiratsu, K., Ohme-Takagi, M., Shinozaki, K. and Yamaguchi-Shinozaki, K. (2005). AREB1 Is a transcription activator of novel ABRE-dependent ABA signaling that enhances drought stress tolerance in *Arabidopsis*. *Plant Cell* 17, 3470-88.

### **Intercropping for disease control:**

Leung, H., Zhu, Y., Revilla-Molina, I., Fan, J. X., Chen, H., Pangga, I., Cruz, C. V. and Mew, T. W. (2003). Using Genetic Diversity to Achieve Sustainable Rice Disease Management. *Plant Disease* 87, 1156-1169.

Orbach, M. J., Farrall, L., Sweigard, J. A., Chumley, F. G. and Valent, B. (2000). A telomeric avirulence gene determines efficacy for the rice blast resistance gene Pi-ta. *Plant Cell* 12, 2019-32.

Zhu, Y., Chen, H., Fan, J., Wang, Y., Li, Y., Chen, J., Fan, J., Yang, S., Hu, L., Leung, H. et al. (2000). Genetic diversity and disease control in rice. *Nature* 406, 718-22.

### **Biofuels:**

Chapple, C., Ladisch, M. and Meilan, R. (2007). Loosening lignin's grip on biofuel production. *Nat Biotechnol* 25, 746-8.

Hill, J., Nelson, E., Tilman, D., Polasky, S. and Tiffany, D. (2006). Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuels. *Proc Natl Acad Sci U S A* 103, 11206-10.

Ragauskas, A. J., Williams, C. K., Davison, B. H., Britovsek, G., Cairney, J., Eckert, C. A., Frederick, W. J., Jr., Hallett, J. P., Leak, D. J., Liotta, C. L. et al. (2006). The Path Forward for Biofuels and Biomaterials. *Science* 311, 484-489.

Service, R. F. (2007). CELLULOSIC ETHANOL: Biofuel Researchers Prepare to Reap a New Harvest. *Science* 315, 1488-1491.

Sticklen, M. (2006). Plant genetic engineering to improve biomass characteristics for biofuels. *Curr Opin Biotechnol* 17, 315-9.

Torney, F., Moeller, L., Scarpa, A. and Wang, K. (2007). Genetic engineering approaches to improve bioethanol production from maize. *Curr Opin Biotechnol* 18, 193-9.

Dai, Z., Hooker, B. S., Quesenberry, R. D. and Thomas, S. R. (2005). Optimization of *Acidothermus cellulolyticus* endoglucanase (E1) production in transgenic tobacco plants by transcriptional, post-transcription and post-translational modification. *Transgenic Res* 14, 627-43.

- Hu, W.-J., Harding, S. A., Lung, J., Popko, J. L., Ralph, J., Stokke, D. D., Tsai, C.-J. and Chiang, V. L. (1999). Repression of lignin biosynthesis promotes cellulose accumulation and growth in transgenic trees. *Nat Biotech* 17, 808-812.
- Li, L., Zhou, Y., Cheng, X., Sun, J., Marita, J. M., Ralph, J. and Chiang, V. L. (2003). Combinatorial modification of multiple lignin traits in trees through multigene cotransformation. *Proceedings of the National Academy of Sciences* 100, 4939-4944.
- Morinaka, Y., Sakamoto, T., Inukai, Y., Agetsuma, M., Kitano, H., Ashikari, M. and Matsuoka, M. (2006). Morphological Alteration Caused by Brassinosteroid Insensitivity Increases the Biomass and Grain Production of Rice. *Plant Physiol.* 141, 924-931.
- Oraby, H., Venkatesh, B., Dale, B., Ahmad, R., Ransom, C., Oehmke, J. and Sticklen, M. (2007). Enhanced conversion of plant biomass into glucose using transgenic rice-produced endoglucanase for cellulosic ethanol. *Transgenic Res.*
- Tiimonen, H., Aronen, T., Laakso, T., Saranpaa, P., Chiang, V., Ylioja, T., Roininen, H. and Haggman, H. (2005). Does lignin modification affect feeding preference or growth performance of insect herbivores in transgenic silver birch (*Betula pendula* Roth) *Planta* 222, 699-708.
- Monarch butterflies and Bt corn:**
- Andow, D. A. and Zwahlen, C. (2006). Assessing environmental risks of transgenic plants. *Ecology Letters* 9, 196-214.
- Gatehouse, A. M. R., Ferry, N. and Raemaekers, R. J. M. (2002). The case of the monarch butterfly: a verdict is returned. *Trends Genet* 18, 249-51.
- Losey, J. E., Rayor, L. S. and Carter, M. E. (1999). Transgenic pollen harms monarch larvae. *Nature* 399, 214-214.
- Hansen Jesse, L. C. and Obrycki, J. J. (2000). Field deposition of Bt transgenic corn pollen: lethal effects on the monarch butterfly. *Oecologia* 125, 241-248.
- Hellmich, R. L., Siegfried, B. D., Sears, M. K., Stanley-Horn, D. E., Daniels, M. J., Mattila, H. R., Spencer, T., Bidne, K. G. and Lewis, L. C. (2001). Monarch larvae sensitivity to *Bacillus thuringiensis*- purified proteins and pollen. *Proceedings of the National Academy of Sciences*, 211297698.
- Oberhauser, K. S., Prysby, M. D., Mattila, H. R., Stanley-Horn, D. E., Sears, M. K., Dively, G., Olson, E., Pleasants, J. M., Lam, W.-K. F. and Hellmich, R. L. (2001). Temporal and spatial overlap between monarch larvae and corn pollen. *Proceedings of the National Academy of Sciences*, 211234298.
- Pleasants, J. M., Hellmich, R. L., Dively, G. P., Sears, M. K., Stanley-Horn, D. E., Mattila, H. R., Foster, J. E., Clark, T. L. and Jones, G. D. (2001). Corn pollen deposition on milkweeds in and near cornfields. *Proceedings of the National Academy of Sciences*, 211287498.
- Sears, M. K., Hellmich, R. L., Stanley-Horn, D. E., Oberhauser, K. S., Pleasants, J. M., Mattila, H. R., Siegfried, B. D. and Dively, G. P. (2001). Impact of Bt corn pollen on monarch butterfly populations: A risk assessment. *Proceedings of the National Academy of Sciences*, 211329998.

Stanley-Horn, D. E., Dively, G. P., Hellmich, R. L., Mattila, H. R., Sears, M. K., Rose, R., Jesse, L. C. H., Losey, J. E., Obrycki, J. J. and Lewis, L. (2001). Assessing the impact of Cry1Ab-expressing corn pollen on monarch butterfly larvae in field studies. *Proceedings of the National Academy of Sciences*, 211277798.

Zangerl, A. R., McKenna, D., Wraight, C. L., Carroll, M., Ficarello, P., Warner, R. and Berenbaum, M. R. (2001). Effects of exposure to event 176 *Bacillus thuringiensis* corn pollen on monarch and black swallowtail caterpillars under field conditions. *Proceedings of the National Academy of Sciences*, 171315698.

### **Bioremediation:**

Pilon-Smits, E. (2005). Phytoremediation. *Annu Rev Plant Biol* 56, 15-39.

Bizily, S. P., Kim, T., Kandasamy, M. K. and Meagher, R. B. (2003). Subcellular Targeting of Methylmercury Lyase Enhances Its Specific Activity for Organic Mercury Detoxification in Plants. *Plant Physiol.* 131, 463-471.

Sonoki, T., Kajita, S., Ikeda, S., Uesugi, M., Tatsumi, K., Katayama, Y. and Iimura, Y. (2005). Transgenic tobacco expressing fungal laccase promotes the detoxification of environmental pollutants. *Appl Microbiol Biotechnol* 67, 138-42.

### **Arsenic Bioremediation:**

Tripathi, R. D., Srivastava, S., Mishra, S., Singh, N., Tuli, R., Gupta, D. K. and Maathuis, F. J. (2007). Arsenic hazards: strategies for tolerance and remediation by plants. *Trends Biotechnol* 25, 158-65.

Ha, S.-B., Smith, A. P., Howden, R., Dietrich, W. M., Bugg, S., O'Connell, M. J., Goldsbrough, P. B. and Cobbett, C. S. (1999). Phytochelatin Synthase Genes from *Arabidopsis* and the Yeast *Schizosaccharomyces pombe*. *Plant Cell* 11, 1153-1164.

Zhao, F. J., Wang, J. R., Barker, J. H. A., Schat, H., Bleeker, P. M. and McGrath, S. P. (2003). The role of phytochelatins in arsenic tolerance in the hyperaccumulator *Pteris vittata*. *New Phytologist* 159, 403-410.

### **Disease resistance:**

Bonfim, K., Faria, J. C., Nogueira, E. O., Mendes, E. A. and Aragao, F. J. (2007). RNAi-mediated resistance to Bean golden mosaic virus in genetically engineered common bean (*Phaseolus vulgaris*). *Mol Plant Microbe Interact* 20, 717-26.

Horvath, H., Rostoks, N., Brueggeman, R., Steffenson, B., von Wettstein, D. and Kleinhofs, A. (2003). Genetically engineered stem rust resistance in barley using the *Rpg1* gene. *Proc Natl Acad Sci U S A* 100, 364-9.

Kusaba, M. (2004). RNA interference in crop plants. *Curr Opin Biotechnol* 15, 139-43.

McDowell, J. M. and Woffenden, B. J. (2003). Plant disease resistance genes: recent insights and potential applications. *Trends Biotechnol* 21, 178-83.

### **Pharma-Planta:**

Gomord, V., Chamberlain, P., Jefferis, R. and Faye, L. (2005). Biopharmaceutical production in plants: problems, solutions and opportunities. *Trends Biotechnol* 23, 559-65.

- Kanamoto, H., Yamashita, A., Asao, H., Okumura, S., Takase, H., Hattori, M., Yokota, A. and Tomizawa, K. (2006). Efficient and stable transformation of *Lactuca sativa* L. cv. Cisco (lettuce) plastids. *Transgenic Res* 15, 205-17.
- Ko, K., Tekoah, Y., Rudd, P. M., Harvey, D. J., Dwek, R. A., Spitsin, S., Hanlon, C. A., Rupprecht, C., Dietzschold, B., Golovkin, M. et al. (2003). Function and glycosylation of plant-derived antiviral monoclonal antibody. *Proc Natl Acad Sci U S A* 100, 8013-8.
- Sparrow, P. A., Irwin, J. A., Dale, P. J., Twyman, R. M. and Ma, J. K. (2007). Pharma-Planta: road testing the developing regulatory guidelines for plant-made pharmaceuticals. *Transgenic Res* 16, 147-61.

**Heterosis:**

Hochholdinger, F. and Hoecker, N. (2007). Towards the molecular basis of heterosis. *Trends Plant Sci*.

Zhang, Y., Ni, Z., Yao, Y., Nie, X. and Sun, Q. (2007). Gibberellins and heterosis of plant height in wheat (*Triticum aestivum* L.). *BMC Gene* t8, 40.

Guo, M., Rupe, M. A., Zinselmeier, C., Habben, J., Bowen, B. A. and Smith, O. S. (2004). Allelic variation of gene expression in maize hybrids. *Plant Cell* 16, 1707-16.

**Flavonoids and human health:**

Davies, K. M. (2007). Genetic modification of plant metabolism for human health benefits. *Mutat Res* 622, 122-37.

Schijlen, E. G., de Vos, C. H., Martens, S., Jonker, H. H., Rosin, F. M., Molthoff, J. W., Tikunov, Y. M., Angenent, G. C., van Tunen, A. J. and Bovy, A. G. (2007). RNA interference silencing of chalcone synthase, the first step in the flavonoid biosynthesis pathway, leads to parthenocarpic tomato fruits. *Plant Physiology* 144, 1520-30.

Verhoeven, M. E., Bovy, A., Collins, G., Muir, S., Robinson, S., de Vos, C. H. and Colliver, S. (2002). Increasing antioxidant levels in tomatoes through modification of the flavonoid biosynthetic pathway. *J Exp Bot* 53, 2099-106.