



Prof. Ingo Potrykus Professor em. (ETH, Zürich)



Most important awards, prizes and academies

Honours: ISPMB International Award in Plant Molecular Biology and Biotechnology 2000; American Society of Plant Biologists (ASPB) Leadership in Science Public Service Award 2001; Crop Science of America (CSSA) 2001; CSSA President's Award 2002; European Culture Award in Science 2002; Honorary Doctor, Swedish University of Agricultural Sciences 2002; University of Freiburg, Germany 2007; "The most influential scientist" in the area of Agricultural, Industrial, and Environmental Biotechnology for the decade 1995-2005, elected by the peers of *Nature Biotechnology* 2006; Cover *TIME Magazine* July 31, 2000. *Academies:* Academia Europaea, Swiss Academy of Technical Sciences, Hungarian Academy of Sciences, Pontifical Academy of Sciences.

Summary of scientific research

Prof. Potrykus' work centred on the development and application of genetic engineering technology for and to 'food security' crops such as rice (*Oryza sativa*), wheat (*Triticum aestivum*), sorghum (*Sorghum bicolor*), and cassava (*Manihot esculenta*), in order to solve problems that are difficult to treat with traditional techniques. He also focused on the areas of disease- and pest resistance, improved food quality, improved yield, improved exploitation of natural resources, and improved bio-safety. He is the inventor and promoter of 'Golden Rice', a sustainable contribution

to reduce vitamin A-malnutrition (www.goldenrice.org).

Main publications

Ca. 340 publications in refereed journals; ca. 30 international patents. Potrykus, I. (1971) Intra and interspecific fusion of protoplasts from petals of *Torrenia baillioni* and *Torrenia fournierii*. *Nature* 231, 57-8; Potrykus, I. and Durand J. (1972) Callus formation from single protoplasts of Petunia. *Nature* 327, 286-7; Potrykus, I. (1973) Transplantation of chloroplasts into protoplasts of Petunia. *Z.Pflanzenphysiol.* 70, 364-6; Potrykus, I. and Hoffmann, F. (1973). Transplantation of nuclei into protoplasts of higher plants. *Z.Pflanzenphysiol.* 69, 287-9, 1976; Potrykus, I., Harms, C.T. and Lörz, H. (1976) Problems in culturing cereal protoplasts. In: *Cell Genetics in Higher Plants*. D. Dudits *et al.* (eds), Akademiai kiado, Budapest, 129-40; Potrykus, I., Harms, C.T., Lörz, H. and Thomas, E. (1977). Callus formation from stem protoplasts of corn (*Zea mays* L.). *Mol. Gen. Genet.* 156, 347-50; Callus formation from cell culture protoplasts of corn (*Zea mays*). Brisson, N., Paszkowski, J., Penswick, J., Gronenborn, B., Potrykus, I. and Hohn, T. (1984). Expression of a bacterial gene in plants using a viral vector. *Nature* 310, 511-4; Paszkowski, J., Shillito, R.D., Saul, M.W., Mandak, V., Hohn, T., Hohn, B., Potrykus, I. (1984) Direct gene transfer to plants. *EMBO J.* 3, 2717-22; Potrykus, I., Paszkowski, J., Saul, M.W., Petruska, J., Shillito, R.D. (1985). Molecular and general genetics of a hybrid foreign gene introduced into tobacco by direct gene transfer. *Mol. Gen. Genet.* 199, 169-77; Potrykus, I., Saul, M.W., Petruska, J., Paszkowski, J. and Shillito, R.D. (1985). Direct gene transfer to cells of a graminaceous monocot. *Mol. Gen. Genet.* 199, 183-8; Shillito, R.D., Saul, M.W., Müller, M., Paszkowski, J. and Potrykus, I. (1985). High efficiency direct gene transfer to plants. *Bio/Technology* 3, 1099-103; Schocher, R.J., Shillito, R.D., Saul, M.W., Paszkowski, J. and Potrykus, I. (1986). Co-transformation of unlinked foreign genes into plants by direct gene transfer. *Bio/Technology* 4, 1093-6; Paszkowski, J., Baur, M., Bogucki, A. and Potrykus, I. Gene targeting in plants. *EMBO J.* 7, 4021-6 (1988); Potrykus, I. Gene transfer to cereals: an assessment. *Bio/Technology* 8, 535-42 (1990); Baur M, Potrykus I., Paszkowski J. (1990) Intermolecular homologous recombination in plants. *Mol. Cell. Biol.* 10, 492-500; Mittelsten Scheid, O., Paszkowski, J., and Potrykus, I. Reversible inactivation of transgene in *Arabidopsis thaliana*. *Mol. Gen. Genet.* 228, 104-12 (1991); Potrykus, I. Gene transfer to plants: Assessment of Published Approaches and Results. *Annu. Rev. Plant Physiol. Plant Mol. Biol.* 42, 205-25 (1991); Sautter, C., Waldner, H., Neuhaus-Url, G., Galli, A., Neuhaus, G. and Potrykus, I. Micro-Targeting: High efficiency gene transfer using a novel approach for the acceleration of microprojectiles. *Bio/Technology* 9, 1080-5 (1991); Spangenberg, G., Freydl, E., Osusky, M., Nagel, J. and Potrykus, I. Organelle transfer by microfusion of defined protoplast-cytoplasm pairs. *Theor. Appl. Genet.* 81, 477-86 (1991); Datta, S.K., Datta, K., Soltanifar, N., Donn, G. and Potrykus, I. Herbicide resistant Indica rice plants from Indica breeding line IR72 after PEG-mediated transformation of protoplasts. *Plant Mol. Biol.* 20, 619-29 (1992); Iida, S., Mittelsten Scheid, O., Saul, M.W., Seipel, K., Miyazaki, Ch. and Potrykus, I. Expression of a downstream gene from a bicistronic transcription unit in transgenic tobacco plants. *Gene* 119, 199-205 (1992); Takamizo,

T., Spangenberg, G., Sugino, K. and Potrykus, I. Intergeneric somatic hybridization in *Gramineae*: Somatic hybrid plants between tall fescue (*Festuca arundinacea* Schreb.) and Italian ryegrass (*Lolium multiflorum* Lam.). *Mol. Gen. Genet.* 231, 1-6 (1992); Wang, Z.Y., Takamizo, T., Iglesias, V.A., Osusky, M., Nagel, J., Potrykus, I. and Spangenberg, G. Transgenic plants of tall fescue (*Festuca arundinacea* Schreb.) obtained by direct gene transfer to protoplasts. *Bio/Technology* 10, 691-6 (1992); Spangenberg, G., Wang, Z.Y., Wu, X.L., Nagel, J., Iglesias, V.A., and Potrykus, I. (1995) Transgenic Tall Fescue (*Festuca arundinacea* Schreb.) and Red Fescue (*Festuca pratensis* Huds) Plants from Microprojectile Bombardment of Embryogenic Suspension Cells. *J. Plant Physiol.* 145: 693-701; Spangenberg, G., Wang, Z.A., Wu, X.L., Nagel, J., Potrykus, I. (1995); Potrykus, K., Fütterer, J., Potrykus, I. (1995) 'Horizontal' gene transfer from a transgenic potato line to a bacterial pathogen (*Erwinia chrysanthemi*) occurs – if at all – at an extremely low frequency. *Bio/Technology* 13, 1094-8; Linn, W., Datta, K., Potrykus, I., Muthukrishnan, S., Datta, S.K. (1995) Genetic engineering of rice for resistance to sheath blight. *Bio/Technology* 13, 686-91; Wünn, J., Klöti, A., Burkhardt, P., Ghosh-Biswas, G.C., Launis, K., Iglesias, V.A., Potrykus, I. (1996) Transgenic Indica rice breeding line IR58 expressing a synthetic CryA(b) gene from *Bacillus thuringiensis* provides effective insect pest control. *Bio/Technology* 14, 171-6; Li, H.Q., Sautter, C., Potrykus, I., Puonti-Kaerlas, J. (1996) Genetic transformation of cassava (*Manihot esculenta* Crantz). *Nature Biotechnol.* 14, 736-40; Burkhardt, P.K., Beyer, P., Wünn, J., Klöti, A., Armstrong, G. Schledz, M., von Lintig, J. Potrykus, I. (1997) Transgenic rice (*Oryza sativa*) endosperm expressing daffodil (*Narcissus pseudonarcissus*) phytoene synthase accumulates phytoene, a key intermediate of provitamin A biosynthesis. *Plant J.* 11, 1071-8; Fütterer J., Rothnie H.M., Hohn T., Potrykus I. (1997) Rice tungro bacilliform virus open reading frames II and III are translated from polycistronic pregenomic RNA by leaky scanning. *J. Virol.* 71, 7984-9; Klöti, A., Henrich, C., Bieri, S., He, X., Chen, G., Burkhardt, P.K., Wünn, J., Lucca, P., Hohn, T., Potrykus, I., Fütterer, J. (1999) Upstream and downstream sequence elements determine the specificity of the rice tungro bacilliform virus promoter and influence RNA production after transcription. *Plant Mol Biol.* 40, 249-66; Ye, X., Al-Babili, S., Klöti, A., Zhang, J., Lucca, P., Beyer, P., Potrykus, I. (2000). Engineering provitamin A (b-carotene) biosynthetic pathway into (carotenoid-free) rice endosperm. *Science* 287, 303-5; Clausen, M., Krauter, R., Schachermeyer, G., Potrykus, I., Sautter, C. (2000). Antifungal activity of a virally encoded gene in transgenic wheat. *Nature/Biotechnol.* 18, 446-9; Lucca P., Hurrell R., Potrykus I. (2000). Genetic engineering approaches to improve the bioavailability and the level of iron in rice grains. *Theor. Appl. Genetics* 102, 392-7 (2001). Potrykus, I. (2005). GMO-Technology and Malnutrition – Public Responsibility and Failure. *Electronic Journal for Biotechnology* [online]. 15 December 2005, vol. 8, no. 3 [cited 16 June 2006]. Available from: <http://www.ejbiotechnology.info/content/vol18/issue3/editorial.html>. ISSN 0717-3458; Potrykus, I. & Ammann, K., eds. (2010) [Transgenic Plants for Food Security in the Context of Development](#), Vol. 27/5, pp 445-718, Proceedings of a Study Week of the Pontifical Academy of Sciences, Elsevier, Amsterdam, IS: ISSN 1871-6784; Potrykus, Ingo. Regulation must be revolutionized. *Nature*, Vol 466, 29 July 2010.

