NAME MARTON, Laszlo	POSITION TITLE Principal Investigator

1. EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Committe of Scientific Qualifications, Hungarian Acad. Sci. (Candidate in Biological Sciences)	C.B.S.	1990	Genetics
József Attila University,Szeged, Hungary	Ph.D.	1976	Genetics
József Attila University,Szeged, Hungary	M.S.	1973	Genetics

2. Professional experience:

2004-Director, Professional Science Masters Program, University of South Carolina, Columbia, SC
1999-Present Professor, Department of Biological Sciences, University of South Carolina, Columbia
1990-1999 Associate Professor, Department of Biological Sciences, University of South Carolina, Columbia
1987-1990 Visiting Scientist, Institute of Biological Chemistry, Washington State University, Pullman
1983-1987 Section Head, Institute of Plant Physiology, BRC, Szeged, Hungary
1980-1981 Visiting Scientist, Department of Plant Pathology, University of California-Riverside
1977-1978 Visiting Scientist, Department of Biochemistry, University of Leiden, The Netherlands
1976-1982 Research Scientist, Institute of Plant Physiology, BRC, Szeged, Hungary

3. Evidence for scholarship

Alshaal, T., Domokos-Szabolcsy, É., **Márton, L**., Czakó, M., Kátai, J., Balogh, P., et al. (2013). Restoring Soil Ecosystems and Biomass Production of *Arundo donax* L. under Microbial Communities-Depleted Soil. ***BioEnergy Research***, doi: 10.1007/s12155-12013-19369-12155.

Alshaal, T., Domokos-Szabolcsy, E., **Marton, L**., Czako, M., Katai, J., Balogh, P., et al. (2013). Phytoremediation of bauxite-derived red mud by giant reed. ***Environmental Chemistry Letters****, 11*(3), 295-302. doi: 10.1007/s10311-013-0406-6

Williams, C., Biswas, T., **Marton, L**., & Czako, M. (2013). *Arundo donax*. In B. Singh (Ed.), ***Biofuel Crops: Production, Physiology and Genetics*** *(ISBN 9781845938857)* (pp. 249-270). Wallingford, UK: CABI.

Bittsánszky A, Gyulai G, Czakó M, Gullner G, **Márton L**, Pilinszky K, Király K, Kőmíves T (2012) Transfer of the maize ZmgstF4 gene to *Arabidosis thaliana*. ***Green Biotechnology*** (ed. Dudits D), available from http://www.zoldbiotech.hu/cikk/53-A-kukorica-ZmgstF4-genjenek-atvitele-ludf-be-Arabidopsis-thaliana

Domokos-Szabolcsy, E, **Marton, L**, et al. (2012) Accumulation of red elemental selenium nanoparticles and their biological effects in Nicotiana tabacum. ***Plant Growth Regulation***, online DOI 10.1007/s10725-012-9735-x

Balogh, E., Herr Jr., J.M, Czako, M. and **L. Marton** (2012). Defective Development of Male and Female Gametophytes in Arundo donax L. (Poaceae). ***Biomass&Bioenergy*** 30: 1-5

Czako, M. and **L. Marton** (2011) Subtropical and tropical reeds for biomass. in **Energy Crops** (Nigel G. Halford and Angela Karp, eds.). Royal Society of Chemistry, London & Cambridge, UK, pp. 322-340.

Tóth, E. K., Kriston, V, Nyerges, K., Nardin, F., Czako, M. and **Marton, L**. (2011). "Virological investigation of third-generation biomass plants – Arundo donax l. as an example [In Hungarian with English abstract]." ***Növényvédelem*** (Budapest) 47(11): 451-454.

Williams, C.M.J.; Biswas, T.K.; Black, I.D.; **Marton, L.;** Czako, M.; Harris, P.L.; Pollock, Robert; Heading, Stephen; Virtue, J.G. (2009). Use of poor quality water to produce high biomass yields of giant reed (Arundo donax) on marginal lands for biofuel or pulp/paper**.** ***Acta Horticulturae*** 806: 595-602.

Simon, L., B. Kovács, **Márton, L**. (2008). Olasznád (Arundo donax L.) nehézfém fitoextrakciójának vizsgálata. ***Talajvédelem*** 2008 (special issue): 311-320.

Bittsanszky, A., Gyulai, G., Malone, R.P., Gullner, G., Kiss, J., Czako, M., **Marton, L**., Heszky, L., Komives, T. (2007) Triggering of a Plant Molecular Defense Mechanism: Increase in Gene Expression Levels of Transgene gshI and Poplar Gene gsh1 (Populus × canescens) by Response to the DNA Demethylating Drug DHAC – an qRT-PCR Analysis. ***Acta Phytopathologica et Entomologica Hungarica*** 42 (2): 235–243

Czakó M, Feng X, He Y, Liang D, Pollock R, **Márton L** (2006) Phytoremediation with transgenic plants. Acta Horticulturae 725:753-770

Czakó M, Feng X, He Y, Liang D, **Márton L** (2006) Genetic modification of wetland grasses for phytoremediation. Environmental Geochemistry and Health 28(1): 103-110.

He Y, Sun J, Feng X, Czakó M, **Márton L** (2001) Differential mercury volatilization by tobacco organs expressing a modified bacterial merA gene. Cell Research, 11(3): 231-236

Yu X, Sukumaran S, **Márton L** (1998) Differential expression of the Arabidopsis Nia1 and Nia2 genes: Cytokinin induced nitrate reductase activity is correlated with increased Nia1 transcription and mRNA levels. Plant Physiol 116:1091-1096

Wenck A, Czakó M, Kanevski I, **Márton L** (1997) Frequent collinear long transfer of DNA inclusive of the whole binary vector during Agrobacterium-mediated transformation. ***Plant Mol Biol.*** 34:913-922.

Czakó M, Wenck A, **Márton L** (1996) Negative selection markers for plants. In Technology Transfer of Plant Biotechnology (P. Greshoff, ed). ***Current Topics in Plant Molecular Biology*** 4:67-94

Marton, L, Hrouda, M, Pecsvaradi, A, Czako, M: (1994) T-DNA independent mutations induced in transformed plant cells during Agrobacterium co-cultivation **Transgenic Research** 3:317-325

Márton, L., Wullems, G.J., Molendijk, L., Schilperoort, R.A. (1979) In Vitro transformation of cultured cells from N. tabacum by Agrobacterium tumefaciens. **Nature** 277: 129-131

Maliga, P., Sz.-Breznovits, A., **Márton, L.**, Joo, F. (1975) Non-mendelian streptomycin resistant tobacco with altered chloroplasts and mitochondria. **Nature** 255: 401-402.

Maliga, P., Sz.-Breznovits, A**., Márton, L.** (1973) Streptomycin resistant plants from callus culture of haploid tobacco. **Nature NB** 244: 29-30.

Patents & Patent Applications

http://techfinder.sc.edu/technology/10062

1. US PATENT **6,821,782**: *Sustained Totipotent Culture of Selected Monocot Genera* (Priority date of provisional application Feb. 5, 2001, Issued November 23, 2004**)**

2. US PATENT **7,303,916**: *Sustained Totipotent Culture of Selected Monocot Genera* (Priority date of provisional application Feb. 5, 2001**,** Issued December 4, 2007**)**

3. Hungarian Patent Application *P 05 00786 [*Márton, L. és Czakó, M. (2002) *Szelektált egyszikü nemzetségek hosszan tartó totipotens tenyészete.* [Magyar szabadalmi bejelentés P0500786] (Priority date of provisional application Feb. 5, 2001)

4. Márton, L. and Czakó, M. *Method for micropropagation of monocots based on sustained totipotent cell cultures*. U.S. Patent No. **7,863,046** (Filed May 7, 2007, Issued January 4, 2011**)**

5. US Patent **8,030,073** *Method for micropropagation of monocots based on sustained totipotent cell cultures*. (Division of US PATENT 7,863,046 Filed on, May 7, 2007 Filed Nov. 22, 2010, Issued October 4, 2011**)**

6. US Patent **8,105,835** *Method for micropropagation of monocots based on sustained totipotent cell cultures,* (Division 1 of US Patent 7,863,046 Filed on, May 7, 2007, Filed Nov. 22, 2010, Issued January 31, 2012).

7. European Patent **EP2150100B1** *Method for micropropagation of monocots based on sustained totipotent cell cultures / Verfahren zur Mikropropagation von Monokotyledonen auf Grundlage von dauerhaften totipotenten Zellkulturen / Procédé de micropropagation de monocotyledons basé sur des cultures cellulaires totipotentes entretenues / Metodo per la micropropagazione dei Monocotiledoni basato su delle coltore cellulari totipotenti / Método para la micropropagación de monocotiledóneas basado en cultivos celulares totipotentes continuos* . Application No **EP07794611.9)**, (Filed/Priority date 7/5/07, allowed October 2011 by EPO, granted 612/12) Countries validated: EPO, France, Hungary, Italy, Spain (ES 2388353T3) and the UK.

8. *Method for micropropagation of monocots based on sustained totipotent cell cultures* Australian Patent **2007352625** March 22, 2012. http://www.ipaustralia.gov.au/get-the-right-ip/patents/search-for-a-patent/

9. Malaysian Patent **MY-145797-A** *Method for micropropagation of monocots based on sustained totipotent cell cultures* No. **PI 20094650**, *cleared in April 2012*

10. Brazilian Patent Application *Method for micropropagation of monocots based on sustained totipotent cell cultures / Métodos De Produzir E Mantener Uma Cultura De Célula Embriogênica Totipotente De Uma Planta Monocotiledônea E De Produzir Uma Linha De Planta De Elite , E, Tecido Totipotente De Uma Planta Monocotiledônea* Patent Application No. PI07216491-1 (Filed 07/05/2007) (http://pesquisa.inpi.gov.br/MarcaPatente/jsp/servimg/validamagic.jsp?BasePesquisa=Patentes)

4**. Significant accomplishments and contributions**

PI has a PhD in genetics and 38 years of experience with in vitro culture and propagation as well as genetic manipulation of plants. The Investigator made the first transgenic plant from single plant cells by Agrobacterium tumefaciens and participated in the isolation of the first auxotrophic and chloroplast plant mutants obtained in cell culture. He worked on gene tagging system- based on the random insertion of Agrobacterium plasmid DNA sequences, mechanism of Agrobacterium-mediated gene transfer to plants, the first gene replacement attempts in higher plants in Szeged and at the Institute of Biological Chemistry (WSU, Pullman) where he worked as a visiting scientist .Since 1989 he has been at the University of South Carolina. He worked with further negative selection markers for plants and with gene silencing and epigenetic regulation of gene expression, identified a transformation related specific mutagenesis process in plants. He also discovered the "long T-DNA transfer", conditions to introduce extremely long collinear DNA sequences into a locus. He developed in vitro embryogenic propagation protocols for Arabidopsis.

For the past twelve years the investigator worked on environmentally important grasses for phytoremediation and biomass purposes and developed transgenic salt marsh cordgrass that detoxified organic and inorganic mercury. Furthermore, he worked on efficient procedures for in vitro mass propagation of over seventy species of freshwater and salt marsh monocot species, including Arundo species which are to be used in this project. He worked on somaclonal selection in Arundo embryogenic cell cultures.

Current research activities include somaclonal selection, transgenic plants for mercury phytoremediation, wetland and large biomass plants with specific xenobiotic/pollutant (TCE and trichlorophenol) degradation capacities and on plants that can serve as targets for genetic modification to enhance phytoremediation abilities, digestibility for cellulosic ethanol production, and fuel properties.

The investigator has worked in the field of phytoremediation research for the past fourteen years and completed, as PI or Co-PI, several projects funded intra- and extramurally (sponsored by the South Carolina Sea Grant Consortium, EPA, DOE, NIEHS and private enterprise).