

CURRICULUM VITAE

Laszlo G. Kovacs

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EDUCATION

Ph.D. - University of Missouri-Columbia	1992
University Diploma - University of Agricultural Sciences, Gödöllő, Hungary	1986

PROFESSIONAL EXPERIENCE

Professor Missouri State University, Department of Biology	2009 – Present
Professor Missouri State University, Department of Agriculture	2007 - 2009
Co-Director Center for Grapevine Biotechnology, Missouri State University	2006 - 2009
Assistant and Associate Research Professor Southwest Missouri State University, Department of Fruit Science	1997 –2007
Post-Doctoral Research Associate University of Chicago, Department of Medicine	1995 - 1997
Post-Doctoral Research Associate University of Missouri, Department of Plant Pathology	1993 - 1995
Graduate Research Assistant University of Missouri, Department of Plant Pathology	1988 - 1992

AWARDS AND HONORS

Outstanding Thesis Advisor Award Southwest Missouri State University, Graduate College	2004
Adjunct Professor Status Division of Plant sciences, University of Missouri-Columbia	2009
Excellence in Teaching, Student Award College of Natural and Applied Sciences, Missouri State University	2012
Excellence in Teaching Award College of Natural and Applied Sciences, Missouri State University	2018

PUBLICATIONS IN SCIENTIFIC JOURNALS (PEER-REVIEWED)

1. Mays, V., N. Smith, C. Pham, M. White, Q. Wu, J. Berry, A. Linan, D.A. Wait and **L.G. Kovacs**. Attenuation of photosynthesis in nanosilver-treated *Arabidopsis thaliana* is inherently linked to the particulate nature of silver. Under review in *Heliyon*.
2. Harris ZN, Pratt, J, **Kovacs LG**, Klein LL, Kwasniewski M, Londo JP, Wu, A.S. and Miller AJ. 2023. Grapevine scion gene expression is driven by rootstock and environmental interaction. *BMC Plant Biology* 23:211. <https://doi.org/10.1186/s12870-023-04223-w>
3. Harris ZN, Klein LL, Awale M, Swift J, Migicovsky Z, Bhakta N, Frawley E, Chitwood DH, Fennell A, **Kovacs LG**, Kwasniewski M, Londo JP, Ma Q and Miller AJ. 2021. Root system influence on high dimensional leaf phenotypes over the grapevine growing season. *Gigascience* 10 (12): giab 087. <https://doi.org/10.1093/gigascience/giab087>
4. Iqbal, R., Sargent, K. and **Kovacs, L.G** (2021). Towards Automatic Detection and Quantification of Mildew on Grape Leaf Disks. In *Proceedings of the 18th International Conference on Signal Processing and Multimedia Applications - SIGMAP*, ISBN 978-989-758-525-8; ISSN 2184-9471, pages 81-86. DOI: <https://doi.org/10.5220/0010583900810086>
5. Bhattarai, G., Fennell, A., Londo, J.P., Coleman, C., **Kovacs, L.G.** (2021). A novel grape downy mildew resistance locus from *Vitis rupestris*. *American Journal of Enology and Viticulture*. 72:12-20. <https://doi.org/10.5344/ajev.2020.20030>
6. Beach, S., M. Kovens, L. Hubert, S. Honesty, Q Guo, D. Pap, R. Dai, **L.G. Kovacs**, and W. Qiu. (2017). Genetic and phenotypic characterization of *Grapevine vein clearing virus* from wild *Vitis rupestris*. *Phytopathology* 107:138-144.
7. Toth, Z., P. Winterhagen, B. Kalapos, Y. Su, **L.G. Kovacs**, and E. Kiss. (2016). Expression of a grapevine NAC transcription factor is induced in response to powdery mildew colonization in a salicylic acid-independent manner. *Scientific Reports* 6:30825
8. Pap, D, A. Miller, J. Londo, and **L.G. Kovacs**. (2015) Population structure of *Vitis rupestris*, an important resource for viticulture. *American Journal of Enology and Viticulture* 66:403-410..
9. Toth, Z., E. Kiss and **L.G. Kovacs** (2014). The *ANAC042* transcription factor gene is responsive to powdery mildew infection in *Arabidopsis thaliana*. *Hungarian Agricultural Research* 2:22-26.
10. Li, C., A. Erwin, D. Pap, C. Coleman, A.D. Higgins, E. Kiss, P. Kozma, D.W. Ramming and **L.G. Kovacs** (2013). Selection for *Run1-Ren1* Dihybrid Grapevines Using Microsatellite Markers. *American Journal of Enology Viticulture*. 64:152-155.
11. Ali, M.B., S. Howard, S. Chen, Y. Wang, O. Yu, **L.G. Kovacs** and W. Qiu (2011). Berry skin development in Norton grape: Distinct patterns of transcriptional regulation and flavonoid biosynthesis. *BMC Plant Biology*. 7:9.
12. Di Gaspero G, Copetti D, Coleman C, Castellarin SD, Eibach R, Kozma P, Lacombe T, Gambetta G, Zvyagin A, Cindric P, **Kovacs L**, Morgante M, Testolin R (2011). Selective sweep at the *Rpv3* locus during grapevine breeding for downy mildew resistance. *Theor Appl Genet*. 124(2):277-86.
13. Marsh, E., S. Alvarez, L. Hicks, W.B. Brabazuk, W. Qiu, **L.G. Kovacs** and D. Schatchman (2010). Changes in protein abundance during powdery mildew infection of leaf tissues of Cabernet Sauvignon grapevine (*Vitis vinifera* L.) *Proteomics* 10:2057-2064.
14. Katula-Debreceni, D., A.K. Lencses, A. Szoke, A. Veres, S. Hoffmann, P. Kozma, **L.G. Kovacs**, L. Heszky, and E. Kiss. (2010). Marker-assisted selection for two dominant powdery mildew-resistance genes introgressed into a hybrid grape population. *Scientia Horticulturae* 126:448-453.

15. Novák E., Oláh R., Pedryc A., Howard S., **Kovács G. L.** (2010): Embriogén kultúrák indítása szőlő portokokon. *Kertgazdaság*. 42(2): 77-80. (In Hungarian)
16. Coleman, C., D. Copetti, G., Cipriani, S. Hoffmann, P. Kozma, **L.G. Kovács**, M. Michele Morgante, R. Testolin, and G. Di Gaspero. (2009). The powdery mildew resistance gene *REN1* in two Central Asian grapevines co-segregates with an NBS-LRR gene cluster in two Central Asian Grapes *BMC Genetics* 10:89
17. Fekete, C., R.W. Fung, Z. Szabo, W. Qiu, L. Chang, D.P. Schachtman, and **L.G. Kovacs**. (2009). Up-regulated transcripts in a compatible powdery mildew-grapevine interaction. *Plant Physiology and Biochemistry*, 47:732-738.
18. Zhang, J., H. Ma, S. Chen, S., M. Ji, A. Perl, **L.G. Kovacs**, and S. Chen. (2009). Stress response proteins' differential expression in embryogenic and non-embryogenic callus of *Vitis vinifera* L. cv. Cabernet Sauvignon – a proteomic approach. *Plant Science* 177:103-113.
19. Olah, R., A. Zok, A. Pedryc, S. Howard and **L.G. Kovacs**. (2009). Somatic embryogenesis in a broad spectrum of grapevine genotypes. *Scientia Horticulturae*, 120: 134–137.
20. Galbacs, Z., S. Molnar, G. Halasz, S. Hoffmann, E. Kiss, P. Kozma, **L.G. Kovacs**, A. Veres, Z. Galli, A Szoke, and L. Heszky. (2009). Identification of grapevine cultivars using DNA barcodes. *Vitis* 48:17-24.
21. Winterhagen, P., W. Qiu, S. Howard, and **L.G. Kovács**. (2008). Transcriptional up-regulation of grapevine MLO genes in response to powdery mildew infection. *American Journal of Enology and Viticulture* 59:159-168.
22. Hoffmann, S., G. Di Gaspero, **L.G. Kovacs**, S. Howard, E. Kiss, Z. Galbacs, and R. Testolin. (2008). Resistance to *Erysiphe necator* in the grapevine 'Kishmish vatkana' is controlled by a single locus through restriction of hyphal growth. *Theoretical and Applied Genetics* 116:427-438.
23. Fung, R.W.M., M. Gonzalo, C. Fekete, **L.G. Kovács**, E. Marsh, L. McIntyre, D.P. Schachtman, and W. Qiu. (2008). Powdery mildew induces defense-oriented restructuring of the transcriptome in a susceptible but not in a resistant grapevine. *Plant Physiology* 146:236-249.
24. Fung, R.W.M., W. Qiu, Y. Su, D.P. Schachtman, K. Huppert, C. Fekete and **L.G. Kovács**. (2007). Gene expression variation in grapevine species *Vitis vinifera* L. and *Vitis aestivalis* Michx. *Genetic Resources and Crop Evolution* 54:1541-1553.

RESEARCH SUPPORT

1. Miller, A., D. Chitwood, A. Fennel, M. Kwasniewski, J. Londo, and **L.G. Kovacs**. Adapting perennial crops for climate change: Graft transmissible effects of rootstocks on grapevine shoots NSF- Pant genome Research Project 2016 – 2023
2. **Kovacs, L.G.** and Heywood J. Developing Microsatellite Markers to Study Evolutionary Changes in Plants in Response to Pollinator Extinction. MSU Faculty Research Grant
3. **Kovacs, L.G.** Toxicity of engineered nanoparticles in plants. US Army Engineer Research Development Center. 2015 – 2022
4. **Kovacs, L.G.** An assay system to assess phytotoxicity of engineered nanoparticles. US Army Engineer Research Development Center. 2015 – 2016
5. **Kovacs, L.G.** Exploring the genetic resources in Missouri's rock grape populations. – Missouri State University Faculty Research Grant, 2012 –2013
6. **Kovacs, L.G.**, W. Qiu, D. Schatchman, O. Yu, and P. Durham. Grape Polyphenols: Potential for new commercial products and enhanced plant health. 2008 - 2010

THESES ADVISED (AS MAJOR ADVISOR)

1. Expression of the TA-*iaaM* gene of *Agrobacterium vitis* in *Petunia hybrida*. Lilly Boppuri, M.S. in Plant Science. 1998.
2. Silencing of an *Agrobacterium* oncogene in a *Petunia hybrida* model system. Linq Han, M.S. in Plant Science. 1999.
3. Agronomic Performance of Leafroll Virus-Infected French-American Hybrid Grapevines Hideaki Hanami. M.S. in Plant Science. 1999.
4. Expression of transcription factor genes in grapevine. Turlapati Phanikant Venkata, M.S. in Plant Science. 2004.
5. Biological Control of crown gall in grapevine. Le Chan, M.S. in Plant Science. Thesis title. 2006.
6. Mapping the powdery mildew resistance locus *REN1* in *Vitis vinifera*. Courtney Coleman, M.S. in Natural and Applied Sciences. 2009.
7. Transcriptional analysis of the promoter of powdery mildew-inducible grape gene. Zsofia Toth, MS in Plant science. 2011
8. Exploring genetic resources in rock grapes in the Missouri Ozarks. Daniel Pap. MS in Plant Science, 2014.
9. Selection for *Run1-Ren1* dihybrid grapevines using microsatellite markers. Chen Li, M.S. in Biology. 2013.
10. Cloning and functional analysis of candidate powdery mildew resistance genes of the *REN1* region in *Vitis vinifera*. Courtney Coleman, Ph.D. in Plant Science. Current.
11. RNA-seq analysis to identify species-specific gene expression in grapevine. Zachary Harris, M.S. in Biology, 2018
12. Mapping a new disease resistance locus in an F1 progeny of two wild grape relatives Gaurab Bhattarai, M.S. in Biology, 2019
13. Cloning and sequencing of the *REN1* powdery mildew resistance locus from grapevine. Dani Joseph, M.S. in Biology, 2019
14. Toxicity of silver nanoparticles in plants. Natalie Smith, M.S. in Biology, 2019
15. Analysis of root system architecture and QTL identification in grapevine. Sujan Thapa M.S. in Biology, 2022
16. Identification of quantitative trait loci influencing root system architecture in Grapevine (*Vitis* species) Parinaz Mohtasebi. M.S. in Biology, 2023
17. Quantitative trait loci influencing elemental content in grapevine. Jesse Krokower. M.S. in Biology 2021 – current
18. Carbaryl-induced leaf necrosis in *Vitis rupestris* B38. Courtney Duncan, M.S. in Biology, 2022- current

COURSES TAUGHT

1. GEP 101 – First Year Foundations
2. AGR 680 – Plant Biotechnology
3. BIO 121 – General Biology I
4. BIO 235 - Genetics
5. BIO 236 - Genetics Laboratory
6. BIO 540/640 – Application of Molecular Markers
7. BIO 597/697 – Special Topics in Biology: Genome Biology
8. BIO 597/607 – Special Topics in Biology: Application of CRISPR Genome Editing

SERVICE TO THE SCIENTIFIC COMMUNITY – PAST FIVE YEARS

Reviewer of grant applications:

National Science Foundation: Plant Genome Research Program

Ad hoc reviewer for scientific journals:

International Journal of Molecular Sciences

Plant Cell and Environment

Theoretical and Applied Genetics

Proteomics

Plant Science

BMC Plant Biology

American Journal of Enology and Viticulture

Plant Physiology and Biochemistry

BMC Plant Biology

BMC Genomics

Vitis