

**ANGELOS K. KANELIS (B.S., M.Sc., Ph.D.)**

**Emeritus Professor**

Group of Biotechnology of Pharmaceutical Plants

Laboratory of Pharmacognosy

Department of Pharmaceutical Sciences

Aristotle University of Thessaloniki

541 24 Thessaloniki, Greece

Tel.: +30 2310 997656

E-mail: [kanellis@pharm.auth.gr](mailto:kanellis@pharm.auth.gr)

[www.pharm.auth.gr/kanellis](http://www.pharm.auth.gr/kanellis)

*Cistus* and *Salvia* Genomic databases:

<http://www.ests-pharm.web.auth.gr/search.php?est=0>

TERPNET2013: <http://terpnet2013.pharm.auth.gr/joomla/>

ETHYLENE2018: <http://ethylene2018.maich.gr/en/>

SOLANACEAE 2020: <https://www.sol2020.web.auth.gr/>

**Education:**

- Bachelor of Science degree in Horticulture-Agronomy (March 1973), Agricultural University of Athens.
- Master of Science degree in Vegetable Crops. (March, 1984), University of California, Davis.
- Doctor of Philosophy degree in Horticulture. (August, 1987), University of Maryland, College Park.

**Teaching Experience:**

- Teaching of undergraduate and graduate courses at the Aristotle University of Thessaloniki, University of Crete, University of Athens and Mediterranean Agronomic Institute of Chania.

**Supervising up-to-today:**

- 17 post-docts, 7 Ph.D. students, 16 M.Sc. students and 5 technicians.

**Affiliation**

- Member of 4 national and international scientific societies.

**Participation in Scientific Meetings**

- Participation in 74 meetings with 74 presentations and 47 as invited speaker.

**Grant History:**

- 42 competitive grants from National and EU agencies.

**Professional Recognition (recent):**

- Associated Editor *Frontiers in Plant Science*, Section Plant Metabolism and Chemodiversity
- Member of the Editorial Board of the journal "Postharvest Biology and Technology".
- Associated Editor, *Frontiers in Sustainable Food Systems*, Section Crop Biology and Sustainability
- Associated Editor, *BMC Biotechnology*
- Metrics (January 2021): Citations, 5073, h-index 38, i10-index 63  
Google Scholar: <http://scholar.google.gr/citations?user=ZLJoqwlAAAAJ>

**Main research interests**

**A. Nutritional properties of fruit and vegetables.**

- Enhancement of Vit. C and arginine levels in fruit

**B. Molecular Biotechnology of Secondary Metabolism**

- Isolation, functional and genetic manipulation of genes participating in the biosynthesis of pharmacologically active diterpenes from *Cistus creticus*, *Rosmarinus officinalis* and *Salvia fruticosa*.
- Manipulation of biosynthesis and oxidation of ascorbic acid (vit. C) in plants to enhance nutritional properties of fruit and to increase tolerance to stress.

### C. Molecular Biotechnology of Plant Stress

- Understanding the biochemical and molecular mechanisms by which low oxygen suppresses fruit ripening by isolating and characterizing a number of genes participating in low oxygen action on tomato and citrus fruit ripening.
- Arginine biosynthesis in tomato and its manipulation to enhance nutritional properties of tomato fruit and to increase tolerance to drought and salinity.

#### Main Publications:

1. Chatzopoulou, F., M. Sanmartin, I. Mellidou, I. Pateraki, A. Koukounaras, G. Tanou, M.S. Kalamaki, S. Veljović-Jovanović, T.C. Antić, S. Kostas, P. Tsouvaltzis, R. Grumet and **A.K. Kanellis**. 2020. Silencing of ascorbate oxidase results in reduced growth, altered ascorbic acid levels and ripening pattern in melon fruit. *Plant Physiology and Biochemistry*. Elsevier Masson. <https://doi.org/10.1016/j.plaphy.2020.08.040>
2. Van Der Straeten, D. **A.K. Kanellis**, P. Kalaitzis, M. Bouzayen, C. Chang, A. Mattoo, J.-S. Zhang. 2020. Ethylene Biology and Beyond: Novel Insights in the Ethylene Pathway and Its Interactions. *Front. Plant Sci.* 11: 248. doi: 10.3389/fpls.2020.00248
3. Papaefthimiou, D., G. Diretto, O.C. Demurtas, P. Mini, P. Ferrante, G. Giuliano and **A.K. Kanellis**. 2019. Recombinant production of labdane-type diterpenes in the green alga *Chlamydomonas reinhardtii*. *Phytochemistry* <https://doi.org/10.1016/j.phytochem.2019.112082>.
4. Mellidou, I., Georgiadou, E.C., Kaloudas, D., Kalaitzis, P., Fotopoulos, V., **Kanellis, A.K.** (2019). Vitamins. *Postharvest Physiology and Biochemistry of Fruits and Vegetables*, eds. E. M. Yahia, A. Carrillo-Lopez. Woodhead Publishing, <https://doi.org/10.1016/B978-0-12-813278-4.00017-8>
5. Mellidou, I. and **A.K. Kanellis**, 2017. Genetic control of ascorbic acid biosynthesis and recycling in horticultural crops. *Front. Chem.*, <https://doi.org/10.3389/fchem.2017.00050>
6. Mellidou, I., A. Koukounaras, F. Chatzopoulou, S. Kostas and **A.K. Kanellis**. 2017. Plant Vitamin C: one single molecule with a plethora of roles. *Fruit and Vegetable Phytochemicals: Chemistry and Human Health*, 2 Volumes. Ed. Elhadi M. Yahia, hn Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, USA.
7. Scheler, U., W. Brandt, A. Porzel, K. Rothe, D. Manzano, D. Bozic., D. Papaefthimiou, G.U. Balcke, A. Henning, S. Lohse, S. Marillonnet, **A.K. Kanellis**, A. Ferrer and A. Tissier. 2016. Elucidation of the biosynthesis of carnosic acid and its reconstitution in yeast. **NATURE COMMUNICATIONS** | 7:12942 | DOI: 10.1038/ncomms12942 .
8. Ioannidi, E., S. Rigas, D. Tsitsekian, G. Daras, A. Alatzas, A. Makris, G. Tanou, A. Argiriou, D. Alexandrou, S. Poethig, P. Hatzopoulos and **A.K. Kanellis**. 2016. Trichome patterning control involves TTG1 interaction with SPL transcription factors. *Plant Mol. Biol.* DOI 10.1007/s11103-016-0538-8.
9. Božić, D., D. Papaefthimiou, K. Brückner, R.C. de Vos, C.A. Tsoleridis, **A.K. Kanellis**. 2015. Towards elucidating carnosic acid biosynthesis in Lamiaceae: functional characterization of the three first steps of the pathway in *Salvia fruticosa* and *Rosmarinus officinalis*. *PLoS ONE* 10(5): e0124106. doi:10.1371/journal.pone.0124106.
10. Ignea, C. E. Ioannou, P. Georgantea, S. Loupassaki, F.A. Triikka, **A.K. Kanellis**, A.M. Makris, V. Roussis, and S. C. Kampranis. 2015. Reconstructing the chemical diversity of labdane-type diterpene biosynthesis in yeast. *Metabolic Engineering* 28:91–103.
11. Ignea, C. F.A. Triikka, A.K. Nikolaidis E. P. Georgantea, Ioannou, S. Loupassaki, P. Kefalas, **A.K. Kanellis**, V. Roussis, A.M. Makris, and S. C. Kampranis. 2015. Efficient diterpene production in yeast by engineering Erg20p into a geranylgeranyl diphosphate synthase. *Metabolic Engineering* 27: 65–75
12. Papaefthimiou, D., A. Papanikolaou, V. Falara, S. Givanoudi, S. Kostas and **A.K. Kanellis**. 2014. Genus *Cistus*: a model for exploring labdane-type diterpenes' biosynthesis and a natural source of high value products with biological, aromatic and pharmacological properties. *Frontiers in Chemistry* 2: 1-19.
13. Brückner, K., D. Božić, D. Manzano, D. Papaefthimiou, I. Pateraki, U. Scheler, A. Ferrer, R. C. H. de Vos, **A. K. Kanellis** and A. Tissier. 2014. Characterization of two genes for the biosynthesis of

- abietane-type diterpenes in rosemary (*Rosmarinus officinalis*) glandular trichomes. *Phytochemistry* 101: 52–64. DOI: 10.1016/j.phytochem.2014.01.021
14. Fotopoulos V. and **A.K. Kanellis**, 2013. Altered apoplastic ascorbate redox state in tobacco plants via ascorbate oxidase overexpression results in delayed dark-induced senescence in detached leaves. *Plant Physiology and Biochemistry* 73: 154-160.
  15. Ignea, C., F.A. Trikka, I. Kourtzelis, A. Argiriou, **A.K. Kanellis**, S.C. Kampranis, and A.M. Makris, 2012. Positive genetic interactors of HMG2 identify a new set of genetic perturbations for improving sesquiterpene production in *Saccharomyces cerevisiae*. *Microbial Cell Factories* 2012, 11:162.
  16. Mellidou, I., J. Keulemans, **A.K. Kanellis**, and M. W. Davey. 2012. Regulation of fruit ascorbic acid concentrations during ripening in high and low vitamin C tomato cultivars. *BMC Plant Biology* 2012, 12:239.
  17. Falara, V., E. Pichersky and **A.K. Kanellis**. 2010. A copalol-8-ol diphosphate synthase from the angiosperm *Cistus creticus* subsp. *creticus* is the key enzyme for the formation of pharmacologically active labdane-type diterpenes. *Plant Physiology* 154: 301–310.
  18. Kalamaki, M. S., D. Alexandrou, D. Lazari, G. Merkouropoulos, V. Fotopoulos, I. Pateraki, A. Aggelis, A. López Carrillo, M. Rubio Cavetas and **A.K. Kanellis**. 2009. Over-expression of a tomato N-acetylglutamate synthase gene in *Arabidopsis thaliana* results in increased tolerance in salt and drought stresses. *Journal of Experimental Botany* 60: 1859-1871; doi:10.1093/jxb/erp072.
  19. Ioannidi, E., M.S. Kalamaki, I. Pateraki, C. Engineer, D. Alexandrou, J. Giovannonni and **A.K. Kanellis**. 2009. Expression profiling of ascorbic acid-related genes during tomato fruit development and ripening and in response to various stresses. *Journal of Experimental Botany* 60: 663–678.
  20. Falara V., V. Fotopoulos, T. Margaritis, T. Anastasaki, I. Pateraki, A. Bozabalidis, D. Kafetzopoulos, C. Demetzos, E. Pichersky, and **A.K. Kanellis**. 2008. Transcriptome analysis approaches for the isolation of trichome - specific genes from the medicinal plant *Cistus creticus* ssp. *creticus*. *Plant Molecular Biology* 68: 633-51.
  21. Munné-Bosch, S.V. Falara, I. Pateraki, M. López-Carbonell, J. Cela and **A.K. Kanellis**. 2009. Physiological and molecular responses of the isoprenoid biosynthetic pathway in a drought-resistant Mediterranean shrub, *Cistus creticus* exposed to water deficit. *Journal of Plant Physiology* 166: 136-145.
  22. Pateraki, I. and **A.K. Kanellis**. 2008. Isolation and functional analysis of two differentially expressed *Cistus creticus* ssp. *creticus* cDNAs encoding geranylgeranyl diphosphate synthase (GGDPS). *Phytochemistry* 69:1641–1652.
  23. Pasentsis K., V. Falara, I. Pateraki, D. Gerasopoulos, and **A.K. Kanellis**. 2007. Identification and expression profiling of low-oxygen regulated genes from Citrus flavedo tissues using RT-PCR differential display. *Journal of Experimental Botany* 58:2203-2216.
  24. Sanmartin, A. M., Pateraki, I., Chatzopoulou, F. and **A.K. Kanellis**. 2007. Differential expression of melon ascorbate oxidase multigene family during fruit development and in response to stress. *Planta* 225:873–885.
  25. Fotopoulos V., Sanmartin, M., and **A.K. Kanellis**. 2006. Effect of ascorbate oxidase over-expression on ascorbate recycling gene expression in response to abiotic and biotic stress factors. *Journal of Experimental Botany* 57:3933–3943.
  26. Pateraki, I., A. M. Sanmartin, M. S. Kalamaki, D. Gerasopoulos and **A.K. Kanellis**. 2004. Molecular characterization and expression studies during melon fruit development and ripening of L-galactono-1,4-lactone dehydrogenase. *Journal of Experimental Botany* 55:1623-1633.
  27. Pateraki, I., and **A.K. Kanellis**. 2004. Isolation of high-quality nucleic acids from *Cistus creticus* spp *creticus* and other medicinal plants. *Analytical Biochemistry* 328:90-92.
  28. Sanmartin, M. P. D. Drogoudi, T. Lyons, J. Barnes, I.Pateraki and **A.K. Kanellis**. 2003. Over-expression of ascorbate oxidase in the apoplast of transgenic tobacco results in altered ascorbate and glutathione redox states and increased sensitivity to ozone. *Planta* 216:918-928