

# Sigita Jurkonienė

## CONTACT INFORMATION

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orcid.org/0000-0002-1493-4782  
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Scopus Author ID: 6603128144  
<https://www.researchgate.net/profile/Sigita-Jurkoniene>

## EDUCATION AND ACADEMIC DEGREE

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1993 PhD Academic degree in Natural sciences (N 000)  
1973–1978 Vilnius University, biology, biophysics

## PROFESSIONAL EXPERIENCE

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2013 – until now Head of laboratory of Plant Physiology  
2015 – until now Chief Researcher  
1996 – 2015 Senior Researcher, from 2003 to 2010, Scientific Secretary of the Institute of Botany  
1993 – 1996 Researcher  
1978 – 1993 Junior Researcher of the Laboratory of Plant Physiology of Institute of Botany

## RESEARCH INTERESTS

Plant physiology, plant cell physiology, plasma membrane ATPase, cell toxicology, control of plant growth and organogenesis by bioactive substances, plant response to adverse environmental conditions, biomarkers of abiotic stress, calcium's role in signal transmission.

## PUBLICATIONS

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*Scientific articles published in journals (books), indexed in „Clarivate Analytics Web of Science“ database (with citation index):*

1. Todorova, D.; Katerova, Z.; Shopova, E.; Brankova, L.; Sergiev, I.; Jankauskienė, J.; Jurkonienė, S. (2022). The Physiological Responses of Wheat and Maize Seedlings Grown under Water Deficit Are Modulated by Pre-Application of Auxin-Type Plant Growth Regulators. *Plants*, 11, 325.
2. Vaštakaitė-Kairienė, V.; Samuolienė, G.; Šveikauskas, V.; Laužikė, K.; Jurkonienė, S. (2022). The Influence of End-of-Day Blue Light on the Growth, Photosynthetic, and Metabolic Parameters of Lettuce at Different Development Stages. *Plants*, 11, 2798. <https://doi.org/10.3390/plants11202798>
3. Jankauskienė, J.; Mockevičiūtė, R.; Gavelienė, V.; Jurkonienė, S.; Anisimovienė, N. (2022). The Application of Auxin-like Compounds Promotes Cold Acclimation in the Oilseed Rape Plant. *Life*, 12, 1283.
4. Gavelienė, V.; Jurkonienė, S. (2022). Probiotics Enhance Cereal Yield and Quality and Modify Agrochemical Soil Properties. *Microorganisms*, 10, 1277.

5. Gavelienė, V., Jurkonienė, S., Jankovska-Bortkevič, E., & Švegždienė, D. (2022). Effects of Elevated Temperature on Root System Development of Two Lupine Species. *Plants*, 11, 192.
6. Mockevičiūtė, R., Jurkonienė, S., Gavelienė, V., Jankovska-Bortkevič, E., Šocik, B., Armalytė, G., & Budrys, R. (2022). Effects Induced by the Agricultural Application of Probiotics on Antioxidant Potential of Strawberries. *Plants*, 11(6), 831.
7. Ščiukaitė, A., Ložienė, K., Labokas, J., & Jurkonienė, S. (2022). Contents of some bioactive compounds in Norway spruce needles as affected by short-term storage at different conditions and implications for their industrial use. *Industrial Crops and Products*, 182, 114919.
8. Gavelienė, V., & Jurkonienė, S. (2022). Probiotics Enhance Cereal Yield and Quality and Modify Agrochemical Soil Properties. *Microorganisms*, 10(7), 1277.
9. Žalnierius, T., Šveikauskas, V., Aphalo, P. J., Gavelienė, V., Būda, V., & Jurkonienė, S. (2022). Gibberellic Acid (GA3) Applied to Flowering *Heracleum sosnowskyi* Decreases Seed Viability Even If Seed Development Is Not Inhibited. *Plants*, 11(3), 314.
10. Jankovska-Bortkevič, E., Gavelienė, V., & Jurkonienė, S. (2022). Physiological roles and signaling of polyamines in plants under stressed conditions. In *Emerging Plant Growth Regulators in Agriculture* (pp. 303-316). Academic Press.
11. Jurkonienė, S., Jankauskienė, J., Mockevičiūtė, R., Gavelienė, V., Jankovska-Bortkevič, E., Sergiev, I., ... & Anisimovienė, N. (2021). Elevated Temperature Induced Adaptive Responses of Two Lupine Species at Early Seedling Phase. *Plants*, 10(6), 1091.
12. Gylytė, B., Jurkonienė, S., Cimmerman, R., Šveikauskas, V., & Manusadžianas, L. (2021). Biomarker identification of isolated compartments of the cell wall, cytoplasm and vacuole from the internodal cell of characean *Nitellopsis obtusa*. *PeerJ*, 9, e10930.
13. Jankovska-Bortkevič, E., Gavelienė, V., Šveikauskas, V., Mockevičiūtė, R., Jankauskienė, J., Todorova, D., Sergiev, I., Jurkonienė, S. (2020). Foliar application of polyamines modulates winter oilseed rape responses to increasing cold. *Plants*, 9(2), 179.
14. Sergiev, I., Todorova, D., Shopova, E., Brankova, L., Jankauskienė, J., Jurkonienė, S., Gavelienė, V., & Mockevičiūtė, R. (2020). Assessment of synthetic auxin type compounds as potential modulators of herbicide action in *Pisum sativum* L. *Biologia*, 75(11), 1845-1853.
15. Karitonas, R., Jurkonienė, S., Sadauskas, K., Vaičiūnienė, J., & Manusadžianas, L. (2020). Modifying effects of leaf litter extracts from invasive versus native tree species on copper-induced responses in *Lemna minor*. *PeerJ*, 8, e9444.
16. Jankovska-Bortkevič, E., Gavelienė, V., Koryznienė, D., Jankauskienė, J., Mockevičiūtė, R., & Jurkonienė, S. (2019). Response of winter oilseed rape to imitated temperature fluctuations in autumn-winter period. *Environmental and Experimental Botany*, 166, 103801.
17. Koryznienė, D., Jurkonienė, S., Žalnierius, T., Gavelienė, V., Jankovska-Bortkevič, E., Bareikienė, N., & Būda, V. (2019). *Heracleum sosnowskyi* seed development under the effect of exogenous application of GA3. *PeerJ*, 7, e6906.
18. Sergiev, I., Todorova, D., Shopova, E., Jankauskiene, J., Jankovska-Bortkevič, E., & Jurkonienė, S. (2019). Exogenous auxin type compounds amend PEG-induced physiological responses of pea plants. *Scientia Horticulturae*, 248, 200-205.
19. ergiev, I., Todorova, D., Shopova, E., Jankauskienė, J., Jankovska-Bortkevič, E., & Jurkonienė, S. (2018). Effects of auxin analogues and heat stress on garden pea Auksino analogų ir karščio streso poveikis žirniams. *Zemdirbyste-Agriculture*, 105(3), 243-248.
20. odorova, D., Katerova, Z., Shopova, E., Jodinskienė, M., Jurkonienė, S., & Sergiev, I.

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- (2016). Responses of pea plants to heat stress and spermine treatment. *Žemdirbystė-Agriculture*, 103(1), 99-106.
21. Manusadžianas, L., Darginavičienė, J., Gylytė, B., Jurkonienė, S., Krevš, A., Kučinskienė, A., Mačkinitė, R., Pakalnis, R., Sadauskas, K., Sendžikaitė, J., & Vitkus, R. (2014). Ecotoxicity effects triggered in aquatic organisms by invasive *Acer negundo* and native *Alnus glutinosa* leaf leachates obtained in the process of aerobic decomposition. *Science of the Total Environment*, 496, 35-44.
  22. Krevš, A., Darginavičienė, J., Gylytė, B., Grigutytė, R., Jurkonienė, S., Karitonas, R., Kučinskienė, A., Pakalnis, R., Sadauskas, K., Vitkus, R., & Manusadžianas, L. (2013). Ecotoxicological effects evoked in hydrophytes by leachates of invasive *Acer negundo* and autochthonous *Alnus glutinosa* fallen off leaves during their microbial decomposition. *Environmental Pollution*, 173, 75-84.
  23. Darginavičienė, J., & Jurkonienė, S. (2013). Characteristics of transmembrane proton transport in the cells of *Lupinus polyphyllus*. *Open Life Sciences*, 8(5), 461-469.
  24. Manusadžianas, L., Caillet, C., Fachetti, L., Gylytė, B., Grigutytė, R., Jurkonienė, S., Karitonas, R., Sadauskas, K., Thomas, F., Vitkus, R., & Férard, J. F. (2012). Toxicity of copper oxide nanoparticle suspensions to aquatic biota. *Environmental Toxicology and Chemistry*, 31(1), 108-114.
  25. Darginavičienė, J., Novickienė, L., Gavelienė, V., Jurkonienė, S., & Kazlauskienė, D. (2011). Ethephon and Avenol as tools to enhance spring rape productivity. *Central European Journal of Biology*, 6(4), 606-615.
  26. Darginavičienė, J., Pašakinskienė, I., Maksimov, G., Rognli, O. A., Jurkonienė, S., Šveikauskas, V., & Bareikienė, N. (2008). Changes in plasmalemma K<sup>+</sup> Mg<sup>2+</sup>-ATPase dephosphorylating activity and H<sup>+</sup> transport in relation to seasonal growth and freezing tolerance of *Festuca pratensis* Huds. *Journal of plant physiology*, 165(8), 825-832.
  27. Lukšiene, Ž., Pečiulyte, D., Jurkonienė, S., & Puras, R. (2005). Inactivation of possible fungal food contaminants by photosensitization. *Food Technology and Biotechnology*, 43(4), 335-341.
  28. Jurkonienė, S., Maksimov, G., Darginavičienė, J., Sadauskas, K., Vitkus, R., & Manusadžianas, L. (2004). Leachate toxicity assessment by responses of algae *Nitellopsis obtusa* membrane ATPase and cell resting potential, and with Daphtoxkit F<sup>TM</sup> magna test. *Environmental Toxicology: An International Journal*, 19(4), 403-408.
  29. Maksimov, G., Shveikauskas, V., Darginavičienė, Y., Jurkonienė, S., Baniene, J., & Shiemaite, J. (2002). The usage of plasmalemmal vesicles inverted by Brij 58 treatment for studying processes, which occur on the cytosolic membrane surface. *Russian Journal of Plant Physiology*, 49(6), 761-765.
  30. Manusadžianas, L., Maksimov, G., Darginavičienė, J., Jurkonienė, S., Sadauskas, K., & Vitkus, R. (2002). Response of the charophyte *Nitellopsis obtusa* to heavy metals at the cellular, cell membrane, and enzyme levels. *Environmental Toxicology: An International Journal*, 17(3), 275-283.
  31. Maksimov, G., Darginavičienė, Y., Jurkonienė, S., & Merkys, A. (2001). Role of the plasmalemma in controlling the gravitropic response of wheat coleoptiles. *Russian Journal of Plant Physiology*, 48(4), 426-430.
  32. Meškauskas, A., Jurkonienė, S., & Moore, D. (1999). Spatial organization of the gravitropic response in plants: applicability of the revised local curvature distribution model to *Triticum aestivum* coleoptiles. *The New Phytologist*, 143(2), 401-407.
  33. Jurkonienė, S. V., Maksimov, G. B., & Merkys, A. I. (1996). A Model for Separating Gravitational Induction and Gravitropic Response in Gravitropism. *Russian Journal Of Plant Physiology C/C Of Fiziologija Rastenii*, 43, 1-5.
  34. Maksimov, G. B., Meshkauskas, A. I., Jurkonienė, S. V., & Merkys, A. I. (1996). Role of Calcium at Different Phases of Gravitropic Response. *Russian Journal Of Plant Physiology C/C Of Fiziologija Rastenii*, 43, 6-9.

35. Batov, A. Y., Jurkonienė, S. V., Markova, I. V., Moshkov, A. V., Medvedev, S. S., & Maksimov, G. B. (1995). Estimation of calcium-ion content in plant-cell plasmalemma vesicles using the fluorescent-probe indo-1. *Russian Journal of Plant Physiology*, 42(1), 129-133.

**Scientific articles published in journals (books), indexed in „Clarivate Analytics Web of Science“ database or Scopus (without citation index):**

1. Jankovska-Bortkevič, E., Jurkonienė, S., Gavelienė, v., Prakas, P. (2022). Oilseed rape: biology, use, current cultivation issues and agronomic management, in: *Oilseed Crops - Biology, Production and Processing*, ed. Hasanuzzaman, M. IntechOpen, ISBN 978-1-80356-171-4.
2. Jurkonienė, S., Mockevičiūtė, R., Jankauskienė, J., Jankovska-Bortkevič, E., Armalytė, G., & Gavelienė, V. (2021). Application of Commercial Plant Probiotics Improves the Berry Yield and Quality of Field-Grown Blackcurrant. *ACS Agricultural Science & Technology*, 1(6), 615-622.
3. Sergiev, I., Todorova, D., Katerova, Z., Shopova, E., Jankauskiene, J., & Jurkonienė, S. (2017). Beneficial effects of auxin-like compounds on pea plants irradiated with UV-C. *Genet Plant Physiol*, 7(3-4), 135-146.
4. Sergiev, I., Todorova, D., Shopova, E., Katerova, Z., Jankauskienė, J., & Jurkonienė, S. (2017). Auxin-like compounds act as protectors against UV-B irradiation in garden pea plants. *Botanica Lithuanica*, 23(2), 79-88.
5. Jurkonienė, S., Žalnierius, T., Gavelienė, V., Švegždienė, D., Šiliauskas, L., & Skridlaitė, G. (2016). Morphological and anatomical comparison of mericarps from different types of umbels of *Heracleum sosnowskyi*. *Botanica Lithuanica*, 22(2), 161-168.
6. Gylytė, B., Manusadžianas, L., Sadauskas, K., Vitkus, R., Jurkonienė, S., Karitonas, R., Petrošius, R., Skridlaitė, G., & Vaičiūnienė, J. (2015). Latent cell mortality after short-term exposure of *Nitellopsis obtusa* cells to copper oxide nanoparticles. *Botanica Lithuanica*, 21(2).
7. Darginavičienė, J., Žemėnas, J., Jurkonienė, S., Meškienė, I., Šveikauskas, V., Chramova, L., & Bareikienė, N. (2007). Signalling of indole-3-acetic acid: inhibitory analysis of MAP kinase/phosphatase pathways. *Biologija*, 2, 40-43.
8. Lukšienė, Ž., Labeikytė, D., Jurkonienė, S., & Juodka, B. (2004). Effects of radiosensitization on proliferation-related events in Ehrlich ascites tumor cells. *Biologija*, 1, 52-54.
9. Jurkonienė, S., & Maksimov, G. (2004). IAA-induced electrophysiological changes in wheat coleoptile cell plasmalemma during gravitropic reaction. *Biologija*, 1, 39-41.

**PARTICIPATION IN INTERNATIONAL AND NATIONAL SCIENTIFIC PROGRAMMES AND PROJECTS (in the last 5 years)**

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2015-2018	Joint research project (Lithuania–Bulgaria) “Plant growth regulators – tools for increasing plants tolerance to temperature stress”, participant.
2015 – 2020	European Commission Project under European Innovation Programme „Soil structure and quality improvement using microorganisms. Reduction of nitrogen compounds emissions, while maintaining the productivity of plants”. Rural development 2015-2019 for Operational Groups. Participant.
2019 – 2020	Joint research project (Lithuania–Bulgaria) „Assessment of ability of synthetic auxin type compounds to counteract herbicide stress in crop plant“, participant.

- 2020 – 2022 EU Structural Funds project, financed by ESF under the EU measure No 09.3.3.3.-LMT-K-712 2014-2020 "Promotion of post-doctoral traineeships" "Effect of light and dark conditions on the photophysiological response and production of leafy vegetables in closed-system horticulture", trainee V. Vaštakaitė-Kairienė, supervisor S. Jurkonienė
- 2020 – 2023 Project of LRC International Cooperation Lithuania-Ukraine-Programme "Investigation of the effect of proline and  $\gamma$ -amino butyric acid on the resistance of plants to water deficit", supervisor.

## **PARTICIPATION IN SCIENTIFIC CONFERENCES**

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### **International scientific conferences (2016–2022, over 20, main of them:**

1. Jankovska-Bortkevič E., Jurkonienė S., Gavelienė V., Mockevičiūtė R., Šveikauskas V., Jankauskienė J., Todorova D., Prakas P. Effect of exogenous polyamines on winter wheat and oilseed rape cold stress response under field conditions, The 3rd International Conference on the Scientific Actualities and Innovations in Horticulture (SAIH2022), Vilnius, September 26-28, 2022.
2. Mockevičiūtė R., Jurkonienė S., Gavelienė V., Jankovska-Bortkevič E., Jankauskienė J. Effect of microbial biostimulants on growth, antioxidant activity and productivity of fruits and vegetables. CEMEPE AND SECOTOX CONFERENCE 2022.
3. Jankauskienė J., Jurkonienė S., Gavelienė V., Jankovska-Bortkevič E., Mockevičiūtė R. Microbial biostimulant counteracts herbicide Galera negative effects on rapeseed growth CEMEPE AND SECOTOX CONFERENCE 2022.
4. Jurkonienė S., Gavelienė S., Mockevičiūtė R., Jankauskienė J., Jankovska-Bortkevič E., Šveikauskas V. Effects of probiotics on antioxidant potential of blackcurrant berries, XII International Scientific Agriculture Symposium „Agrosym 2021“, Jehorina, October 7-10, 2021.
5. Jankovska-Bortkevič E., Jurkonienė S., Gavelienė V., Sergiev I., Jankauskienė J., Koryznienė D., Šimulevič T. Cold acclimation impact on oilseed rape plasma membrane H<sup>+</sup>-ATPase activity during increasing cold stress treatment, International Scientific Conference Kliment's Days 2018, Sofia, November 8–9, 2018.
6. Koryznienė D., Jurkonienė S., Žalnierius T., Gavelienė V., Jankauskienė J., Jankovska-Bortkevič E., Bareikienė N. The effect of GA3 treatment on the development of *Heracleum sosnovskyi* Manden. seeds, International Scientific Conference Kliment's Days 2018, Sofia, November 8–9, 2018.
7. Jankovska-Bortkevič E., Koryznienė D., Jurkonienė S., Gavelienė V., Jankauskienė J., Mockevičiūtė R. The response of winter oilseed rape to putrescine and low temperature treatment, The 11th International "Plant Functioning Under Environmental Stress", Cracow, September 12–15.
8. Jankovska-Bortkevič E., Koryznienė D., Jankauskienė J., Mockevičiūtė R., Gavelienė V., Todorova D., Jurkonienė S. Effects of polyamines on cold stress resistance of common bean, The 2nd International Conference on the Scientific Actualities and Innovations in Horticulture (SAIH2018), Kaunas, June 4–6, 2018.
9. Jankovska-Bortkevič E., Mockevičiūtė R., Jankauskienė J., Jurkonienė S. ir Gavelienė V., New approach of HPTLC for identification of auxins in frost resistant plants, International Symposium for High Performance Thin Layer Chromatography, Berlin, July 4–8, 2017.

### **National scientific conferences:**

10. Jurkonienė S., Gavelienė V., Jankauskienė J., Jodinskienė M., Mockevičiūtė R., Jankovska-Bortkevič E., Pakalniškytė L., Bareikienė N., Žalnierius T., Novickienė L. Current challenges for plant physiologists. Conference dedicated to the 90th anniversary of the birth of Academician Alfonsas Merkis "Contribution of Academician Alfonsas Merkis to the development of plant physiology science". Vilnius, March 15, 2017.

11. Jurkonienė S., Gavelienė V., Jankauskienė J., Jankovska-Bortkevič E. Biotechnological tools to optimize cold tolerance, survival and yield in winterknob crops, National Conference "Plant Biology Research in the Breakthrough Directions of Plant Breeding", Babtai, Kaunas Dist., May 10, 2017.

## **PARTICIPATION IN THE STUDY PROCESS**

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### ***Supervision of PhD students:***

1. T. Žalnierius, PhD thesis: "Control of Sosnovskyi hogweed seed formation by physiologically active substances", 2019 - 2023.
2. B. Šocik, PhD thesis: "Influence of probiotic preparations on root growth, antioxidant activity and productivity formation in root crops", 2018 - 2024.
3. E. Jankovska-Bortkevič, "Characteristics of frost tolerance in winter rape and their changes after treatment with polyamines and proline", thesis defended in 2020.

### ***Scientific consultant:***

4. A. Jankaitė "Research in heavy metals in roadside and evaluation of their influence on the environment" (04T), Vilnius TECH, thesis defended in 2007 m.
5. A. Kazlauskienė "Research and evaluation of the influence of road maintenance salts on the environment" (04T), Vilnius TECH, thesis defended in 2007 m.

### ***Suoervision of Postdoctoral Fellow***

6. V. Vaštakaitė-Kairienė "Effects of light and dark conditions on the photophysiological response and production of leafy vegetables in closed system horticultureenvironment", 2020 – 2022

### ***Supervision of final bachelor's and master's theses (~15)***

Member of 48 doctoral thesis defence councils, 12 of them chairperson of the council, opponent of 1 thesis defended in Latvia, opponent of 2 in Lithuania.

### ***Erazmus+ Supervision of four Italian trainees.***

## **OTHERS**

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- Expert of the Technical Committee LST TK 57 *Trąšos* of the Lithuanian Standardization Department.
- Expert on projects of the State Public Health Service, expert on works submitted for the Lithuanian National Science Prize, expert on works submitted for prizes of the Lithuanian Academy of Sciences, expert on the Research Council of Lithuania, expert on the Lithuanian Business Support Agency, and expert on Canadian international rapeseed development projects.
- Member of the editorial board of the journal „Botanica“ (experimental botany)
- Member of the editorial board of the journal „Space Science and Technology“
- Member of the Board of Reviewers of the journal "Forests".
- Chairwoman of Lithuanian Plant Physiological Society

- Member of Lithuanian Biochemical Society

***Science promotion activities and other works important for the development of the country's economy, culture and society since 2015 y.***

[www.respublika.lt/lt/naujienos/lietuva/lietuvos\\_politika/ko\\_negali\\_padaryti\\_valdzia\\_\\_teks\\_padaryti\\_zmogui1/,print.1](http://www.respublika.lt/lt/naujienos/lietuva/lietuvos_politika/ko_negali_padaryti_valdzia__teks_padaryti_zmogui1/,print.1)

<https://zur.lt/ukininkai-dalinasi-projekto-rezultatais/>

Cooperation in LTV show about prof. Alfonsas Merkys:

<https://www.lrt.lt/mediateka/irasas/1013713773/pradek-nuo-saves>

Consultations to architects G. and N. Urbonai on the Busan Biennial exposition:

TRANSmutation. (Synchronized HD video installation: Lithuanian Central State Archives, Nature Research Center (NRC), The Lithuanian Museum of Ethnocosmology)..