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Profil badawczy

- Molekularne mechanizmy tolerancji stresów abiotycznych (niska temperatura, susza i zasolenie gleby) oraz odporności na patogeny u roślin,
- Organizacja i ewolucja roślinnych sekwencji chromosomowo- i genomowo-specyficznych,
- Transfer genów tolerancji stresów środowiskowych z gatunków *Festuca* do gatunków *Lolium*,
- Molekularne i fizjologiczne mechanizmy plastyczności odpowiedzi poliploidów na stresy środowiskowe.

Publikacje

1. Perlikowski D., Skirycz A., Marczak Ł., Lechowicz K., Augustyniak A., Michäelis A., Kosmala A. (2022). Metabolism of crown tissue is crucial for drought tolerance and recovery after stress cessation in *Lolium/Festuca* forage grasses. *Journal of Experimental Botany*. erac398. DOI: 10.1093/jxb/erac398
2. Perlikowski D., Lechowicz K., Pawłowicz I., Arasimowicz-Jelonek M., Kosmala A. (2022). Scavenging of nitric oxide up-regulates photosynthesis under drought in *Festuca arundinacea* and *F. glaucescens* but reduces their drought tolerance. *Scientific Reports* 12: 6500
3. Perlikowski D., Lechowicz K., Skirycz A., Michaelis A., Pawłowicz I., Kosmala A. (2022). The role of triacylglycerol in the protection of cells against lipotoxicity under drought in *Lolium multiflorum/Festuca arundinacea* introgression form. *Plant and Cell Physiology* 63: 353-368
4. Stefanowicz K., Szymanska-Chargot M., Truman W., Walerowski P., Olszak M., Augustyniak A., **Kosmala A.**, Zdunek A., Malinowski R. (2021). *Plasmiodiophora brassicae*-Triggered Cell Enlargement and Loss of Cellular Integrity in Root Systems Are Mediated by Pectin Demethylation. *Frontiers in Plant Science* 12: 711838
5. Blicharz S., Beemster G.T.S., Ragni L., De Diego N., Spíchal L., Hernández A.E., Marczak Ł., Olszak M., Perlikowski D., **Kosmala A.**, Malinowski R. (2021). Phloem exudate metabolic content reflects the response to water deficit stress in pea plants (*Pisum sativum* L.). *The Plant Journal* 106: 1338-1355
6. Perlikowski D., **Kosmala A.** (2020). Mechanisms of drought resistance in introgression forms of *Lolium multiflorum/Festuca arundinacea*. *Biologia Plantarum* 64: 497-503
7. Augustyniak A., Pawłowicz I., Lechowicz K., Izbiańska-Jankowska K., Arasimowicz-Jelonek M., Rapacz M., Perlikowski D., **Kosmala A.** (2020). Freezing tolerance of *Lolium multiflorum/Festuca arundinacea* introgression forms is associated with the

high activity of antioxidant system and adjustment of photosynthetic activity under cold acclimation. *International Journal of Molecular Sciences* 21 (16): 5899. doi: 10.3390/ijms21165899

8. Lechowicz K., Pawłowicz I., Perlikowski D., Arasimowicz-Jelonek M., Blicharz S., Skirycz A., Augustyniak A., Malinowski R., Rapacz M., **Kosmala A. (2020)**. Adjustment of photosynthetic and antioxidant activities to water deficit is crucial in the drought tolerance of *Lolium multiflorum*/*Festuca arundinacea* introgression forms. *International Journal of Molecular Sciences* 21 (16): 5639. doi: 10.3390/ijms21165639
9. Lechowicz K., Pawłowicz I., Perlikowski D., Arasimowicz-Jelonek M., Majka J., Augustyniak A., Rapacz M., **Kosmala A. (2020)**. Two *Festuca* species - *F. arundinacea* and *F. glaucescens* - differ in the molecular response to drought, while their physiological response is similar. *International Journal of Molecular Sciences* 21(9): 3174. doi: 10.3390/ijms21093174
10. Perlikowski D., Augustyniak A., Skirycz A., Pawłowicz I., Masajada K., Michaelis Ä., **Kosmala A. (2020)**. Efficient root metabolism improves drought resistance of *Festuca arundinacea*, *Plant and Cell Physiology* 61: 492-504
11. Perlikowski D., Wisniewska H., Goral T., Ochodzki P., Majka M., Pawlowicz I., Belter J., **Kosmala A. (2019)**. Identification of Proteomic Components Associated with Resistance to Fusarium Head Blight in Rye. *The Plant Pathology Journal* 35: 313–320
12. Perlikowski D., Augustyniak A., Masajada K., Skirycz A., Soja A. M., Michaelis A., Wolter G., **Kosmala A. (2019)**. Structural and metabolic alterations in root systems under limited water conditions in forage grasses of *Lolium-Festuca* complex. *Plant Science* 283: 211-223
13. Pawłowicz I., Waśkiewicz A., Perlikowski D., Rapacz M., Ratajczak D., **Kosmala A. (2018)**. Remodeling of chloroplast proteome under salinity affects salt tolerance of *Festuca arundinacea*. *Photosynthesis Research* 137: 475-492
14. Augustyniak A., Perlikowski D., Rapacz M., Kościelniak J., **Kosmala A. (2018)**. Insight into cellular proteome of *Lolium multiflorum*/*Festuca arundinacea* introgression forms to decipher crucial mechanisms of cold acclimation in forage grasses. *Plant Science* 272: 22-31
15. Płazek A., Pocięcha E., Augustyniak A., Masajada K., Dziurka M., Majka J., Perlikowski D., Pawłowicz I., **Kosmala A. (2018)**. Dissection of resistance to *Microdochium nivale* in *Lolium multiflorum*/*Festuca arundinacea* introgression forms. *Plant Physiology and Biochemistry* 123: 43-53
16. Majka J., Zwierzykowski Z., Majka M., **Kosmala A. (2018)**. Karyotype reshufflings of *Festuca pratensis* × *Lolium perenne* hybrids. *Protoplasma* 255: 451-458
17. Majka J., Książczyk T., Kiełbowicz-Matuk A., Kopecký D., **Kosmala A. (2017)**. Exploiting repetitive sequences and BAC clones in *Festuca pratensis* karyotyping. *PLoS One* 12 (6): e0179043. doi: 10.1371/journal.pone.0179043
18. Górna K., Perlikowski D., **Kosmala A.**, Stępień Ł. (2017). Host extracts induce changes in the proteome of plant pathogen *Fusarium proliferatum*. *Fungal Biology* 121: 676-688

19. Pawłowicz I., Rapacz M., Perlikowski D., Gondek K., **Kosmala A.** (2017). Abiotic stresses influence the transcript abundance of PIP and TIP aquaporins in *Festuca* species. *Journal of Applied Genetics* 58: 421-435
20. Perlikowski D., Kierszniowska S., Sawikowska A., Krajewski P., Rapacz M., Eckhardt Ä., **Kosmala A.** (2016). Remodeling of leaf cellular glycerolipid composition under drought and re-hydration conditions in grasses from the *Lolium-Festuca* complex. *Frontiers in Plant Science* 7:1027. doi: 10.3389/fpls.2016.01027
21. Perlikowski D., Czyżniewski M., Marczak Ł., Augustyniak A., **Kosmala A.** (2016). Water deficit affects primary metabolism differently in two *Lolium multiflorum/Festuca arundinacea* introgression forms with a distinct capacity for photosynthesis and membrane regeneration. *Frontiers in Plant Science* 7:1063. doi: 10.3389/fpls.2016.01063
22. Perlikowski D., Wiśniewska H., Kaczmarek J., Góral T., Ochodzki P., Kwiatek M., Majka M., Augustyniak A., **Kosmala A.** (2016). Alterations in kernel proteome after infection with *Fusarium culmorum* in two triticales cultivars with contrasting resistance to *Fusarium* head blight. *Frontiers in Plant Science* 7:1217. doi: 10.3389/fpls.2016.01217
23. Shemesh-Mayer E., Ben-Michael T., Rotem N., Rabinowitch H.D., Doron-Faigenboim A., Kosmala A., Perlikowski D., Sherman A., Kamenetsky R. (2015). Garlic (*Allium sativum* L.) fertility: transcriptome and proteome analyses provide insight into flower and pollen development. *Frontiers in Plant Science* 6:271. doi: 10.3389/fpls.2015.00271
24. Bocian A., Zwierzykowski Z., Rapacz M., Koczyk G., Ciesiołka D., **Kosmala A.** (2015). Metabolite profiling during cold acclimation of *Lolium perenne* genotypes distinct in the level of frost tolerance. *Journal of Applied Genetics* 56: 439-449
25. Kubala S., Garnczarska M., Wojtyła Ł., Clippe A., **Kosmala A.**, Żmieńko A., Lutts S., Quinet M. (2015). Deciphering priming-induced improvement of rapeseed (*Brassica napus* L.) germination through an integrated transcriptomic and proteomic approach. *Plant Science* 231: 94-113
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27. Jurczyk B., Krępski T., **Kosmala A.**, Rapacz M. (2013). Different mechanisms trigger an increase in freezing tolerance in *Festuca pratensis* exposed to flooding stress. *Environmental and Experimental Botany* 93: 45-54
28. Perlikowski D., **Kosmala A.**, Rapacz M., Kościelniak J., Pawłowicz I., Zwierzykowski Z. (2014). Influence of short-term drought conditions and subsequent re-watering on the physiology and proteome of *Lolium multiflorum/Festuca arundinacea* introgression forms with contrasting levels of tolerance to long-term drought. *Plant Biology* 16: 385-394
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31. Arasimowicz-Jelonek M., **Kosmala A.**, Janus Ł., Abramowski D., Floryszak-Wieczorek J. (2013). The proteome response of potato leaves to priming agents and S-nitrosoglutathione. *Plant Science* 198: 83-90
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33. Kuczyńska A., **Kosmala A.**, Surma M., Adamski T. (2012). Identification of tillering node proteins differentially accumulated in barley recombinant inbred lines with different juvenile growth habits. *International Journal of Molecular Sciences* 13: 10410-10423
34. Masojć P., **Kosmala A.** (2012). Proteomic analysis of preharvest sprouting in rye using two-dimensional electrophoresis and mass spectrometry. *Molecular Breeding* 30: 1355-1361
35. Pawłowicz I., **Kosmala A.**, Rapacz M. (2012). Expression pattern of the psbO gene and its involvement in acclimation of the photosynthetic apparatus during abiotic stresses in *Festuca arundinacea* and *F. pratensis*. *Acta Physiologiae Plantarum* 34: 1915-1924
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38. Zwierzykowski Z., Zwierzykowska E., Taciak M., **Kosmala A.**, Jones N., Zwierzykowski W., Książczyk T., Krajewski P. (2011). Genomic structure and fertility in advanced generations of breeding populations derived from the allotetraploid *Festuca pratensis* × *Lolium perenne*. *Plant Breeding* 130: 476-480
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