

## Ph.D. Dawid Perlikowski

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### ACADEMIC AND RESEARCH CAREER

#### Education

- 2011-2016 PhD studies, Institute of Plant Genetics of the Polish Academy of Sciences, Department of Biology of Environmental Stresses, Poznan. PhD thesis: "Physiological and molecular basis of tolerance to water deficit conditions in the introgression forms of Italian ryegrass (*Lolium multiflorum* Lam.) and tall fescue (*Festuca arundinacea* Schreb.)". PhD degree: 14.12.2016.
- 2009-2011 MA studies, Adam Mickiewicz University in Poznan, Department of Biology. MA thesis: „Characteristics of selected MAP kinase complexes in *Arabidopsis thaliana*". MA degree: 21.07.2011.
- 2006-2009 BA studies, Adam Mickiewicz University in Poznan, Department of Biology. BA thesis: „Comparison of the homologous chromosomal regions of *Arabidopsis thaliana* and *Brassica rapa* using sequencing data". BA degree: 15.07.2009.

#### Experience

- 2019- Postdoc position in the Plant Molecular Physiology and Cytogenetics Team Department of Biology of the Institute of Plant Genetics PAS.
- 2017-2019 Assistant position in the Plant Molecular Physiology and Cytogenetics Team Department of Biology of the Institute of Plant Genetics PAS.
- 2016-2017 Biologist position in the Plant Molecular Physiology and Cytogenetics Team Department of Biology of the Institute of Plant Genetics PAS.

### RESEARCH INTERESTS

My research is focused on the forage grasses from the *Lolium-Festuca* complex. *Lolium* and *Festuca* species encompasses numerous complementary traits. *L. multiflorum* (Italian ryegrass) and *L. perenne* (perennial ryegrass) are the species with high forage quality but rather low tolerance to abiotic and biotic stresses. Otherwise, *F. pratensis* (meadow fescue) and *F. arundinacea* (tall fescue) are characterized by high level of resistance to pathogens and tolerance to frost, drought and salinity but they cannot compete with *Lolium* species with reference to productivity and quality. Both *Festuca* species are regarded as models among forage grasses for the research associated with drought tolerance (*F. arundinacea*) and tolerance to low temperature (*F. pratensis*). The main aspects of my work involve analysis of changes in the level of protein, primary metabolites and membrane lipids accumulation in leaves and roots during water deficit in relation with the analysis of selected physiological and morphological parameters crucial for the regulation of tolerance to drought in *F. arundinacea* and *L. multiflorum/F. arundinacea* introgression forms.

### MAJOR RESEARCH PROJECTS

Project of Ministry of Agriculture and Rural Development: „Improvement of drought tolerance in Italian ryegrass (*Lolium multiflorum*)", 2011-2013.

Project NSC: „Impact of plant host extract on a micotoxin synthesis and transcription and metabolic activity of pathogenic isolates of *Fusarium proliferatum*", 2011-2014.

Project of Ministry of Agriculture and Rural Development: „Identification of genes associated with the expression of winter-hardiness and drought tolerance in *Lolium multiflorum/Festuca arundinacea* introgression forms”, 2014-2020.

Project NCN: „Analysis of the selected components of root system architecture and root metabolism with reference to water deficit tolerance in grasses of the *Lolium-Festuca* complex”, 2015-2016, **leader**.

#### MAJOR PAPERS

**Perlikowski D.**, Augustyniak A., Masajada K., Skiryecz A., Soja A. M., Michaelis Ä., 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. doi: 10.1016/j.plantsci.2019.02.001. [IF<sub>2017</sub>=3,712].

**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 Triticale Cultivars with Contrasting Resistance to *Fusarium* Head Blight. *Frontiers in Plant Science* 7:1217. doi: 10.3389/fpls.2016.01217. [IF<sub>2015</sub> = 4,495].

**Perlikowski D.**, Czyżniejewski 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. [IF<sub>2015</sub> = 4,495].

**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. [IF<sub>2015</sub> = 4,495].

**Perlikowski D.**, Wiśniewska H., Góral T., Kwiatek M., Majka M., Kosmala A. (2014). “Identification of kernel proteins associated with the resistance to *Fusarium* head blight in winter wheat (*Triticum aestivum* L.)”. *Plos One* 9(10): e110822. doi:10.1371/journal.pone.0110822. [IF<sub>2014</sub> = 3,534].

**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. doi: 10.1111/plb.12074. [IF<sub>2014</sub> = 2,405].

#### RESEARCH VISITS

2012 - Agricultural University In Cracow, Department of Plant Physiology (prof. M. Rapacz, dr B. Jurczyk). Topic: Physiological reaction of *Lolium-Festuca* species to abiotic stresses.

2013 - Institut National de la Recherche Agronomique (INRA), Unité de Recherche Pluridisciplinaire Prairies et Plantes Fourragères, Lusignan, France (dr M. Ghesquière). Topic: Improvement of drought tolerance in forage grasses and analysis of physiological and molecular basis of this tolerance.

2015 - National Institute of Livestock and Grassland Science, Nishinasuno, Japan (prof. Tadashi Takamizo). Topic: The transformation of forage grasses from *Lolium-Festuca*-complex.

2014,2016 - Max Planck Institute in for Plant Physiology Potsdam, Germany (prof. Lothar Willmitzer). Topic: Quantitative and qualitative analysis of membrane lipids using mass spectrometry coupled with liquid chromatography.