

Prof. dr hab. Wacław Orczyk

Affiliation Plant Breeding and Acclimatization Institute – National Research Institute

ACADEMIC AND RESEARCH CAREER

1988	PhD, Warsaw University of Life Sciences – SGGW, Department of Plant Genetics and Horticultural Plant Breeding, plant genetics and tissue culture
1988 - 2001	Adjunct Dept of Tissue Culture, Plant Breeding and Acclimatization Institute
1990- 1991	Visiting Scientist, Department of Molecular Biology, Swedish University of Agricultural Sciences, Uppsala.
1993 – 1994	Postdoctoral Res. Associate, Dept. of Botany and Plant Pathology, Purdue Univ., USA.
1995 - 1997	Postdoctoral Res. Associate, Dept. of Horticulture, Purdue University, USA.
2001	Visiting Scientist, Pioneer Hi-Bred International, Inc. Johnston, USA.
2002-2010	Associate Professor, head of Plant Transformation and Cell Engineering Dept.
2003	The United Kingdom, Scottish Crop Research Institute, Visiting scientist –adaptation of VIGS system for the functional analysis of cereal plants.
since 2011	Professor, head of Genetic Engineering Dept., Plant Breeding and Acclimatization Institute – National Research Institute

MAJOR RESEARCH PROJECTS

1. **Generation and analysis of somatic hybrids** between cultivated forms with wild species in *Cucurbitaceae* and *Solanaceae* (University of Life Sci., Warsaw, IVT, Wageningen, The Netherlands) and generation of somatic hybrids and cybrids in *Brassicaceae* (Swedish University of Agricultural Sciences, Uppsala and Plant Breeding and Acclimatization Inst., Radzikow).
2. **Site-specific recombination for chromosomal engineering** and wide hybridization, project in cooperation with Pioneer Hi-Bred Int., Inc. (USA).
3. **Cereal biotechnology**: adaptation of genetic transformation systems, application of methods for functional genomics: RNAi technology (barley, wheat, *Triticale*), VIGS (wheat, barley, rye), CRISPR/Cas9 system (barley).
4. **Plant – pathogen interactions**: i) genes and enzymes involved in oxidative burst in wheat in response to *P. tritici* infection, ii) wheat transcriptome after inoculation with *P. tritici*, iii) identification and annotation of wheat gene specifically induced in resistant lines and encoding wall associated kinase and iv) experimental confirmation of the gene's role in quantitative resistance against *P. tritici*.

SELECTED PUBLICATIONS (5 PUBLICATIONS, LAST 5 YEARS)

- Dmochowska-Boguta M, Kloc Y, Zielezinski A, Werecki P, Nadolska-Orczyk A, Karlowski WM, Orczyk W. **2020**. TaWAK6 encoding wall-associated kinase is involved in wheat resistance to leaf rust similar to adult plant resistance. *PLoS One* 15, e0227713.
- Groszyk J, Yanushevska Y, Zielezinski A, Nadolska-Orczyk A, Karlowski WM, Orczyk W. **2018**. Annotation and profiling of barley GLYCOGEN SYNTHASE3/Shaggy-like genes indicated shift in organ-preferential expression. *PLoS One* 13.
- Groszyk J, Kowalczyk M, Yanushevska Y, Stochmal A, Rakoczy-Trojanowska M, Orczyk W. **2017**. Identification and VIGS-based characterization of Bx1 ortholog in rye (*Secale cereale* L.). *PLoS One* 12.
- Gasparis S, Kala M, Przyborowski M, Lyznik LA, Orczyk W, Nadolska-Orczyk A. **2018**. A simple and efficient CRISPR/Cas9 platform for induction of single and multiple, heritable mutations in barley (*Hordeum vulgare* L.). *Plant Methods* 14.
- Nadolska-Orczyk A, Rajchel IK, Orczyk W, Gasparis S. **2017**. Major genes determining yield-related traits in wheat and barley. *Theoretical and Applied Genetics* 130, 1081-1098.
- Polish and international patents: “A DNA cassette, binary vector, and strain of *A. tumefaciens* and a method of producing cereal plant of increased productivity and/or root mass” (2016), VIGS transcriptional silencing (2017), CRISPR/Cas9 sequence specific for monocots – patent application 2018.