

Prof. dr hab. Jan Sadowski

professor

email: jsad@igr.poznan.pl

tel. (+48 61) 65 50 214

(+48 61) 65 50 237

Scientific specialization:

Molecular genetics and genomics of Brassica crop species and *Arabidopsis thaliana*

Research area

- Comparative mapping of three basic Brassica genomes (A, B i C) (*Brassica campestris*- A, *Brassica nigra*- B and *Brassica oleracea*- C) with RFLP markers led to identification of several homologous regions (common for all studied genomes). Evidence have been found for structural modifications in A, B, and C genomes that have taken place since the distant polyploidization.
- Construction of chromosomal map for *B. oleracea* (collard/cauliflower) with 400 loci corresponding to known *A. thaliana* genes (gene probes from *A. thaliana* genome sequencing program)
- Identification of 34 conserved chromosomal segment covering 60% of *B. oleracea* genetic map based on comparative analysis with *A. thaliana* genome.
- Analysis of conservation/rearrangements level of selected chromosomal regions (altogether 8 Mbp) between *A. thaliana* and *B. oleracea* (study and application of BAC/FISH/pachyten strategy)
- Analysis of transcription profile for 22.000 *A. thaliana* genes (microarray technique) under ozone and drought stress treatment. Characterizing the transcription profile of genes involved in ABA and ethylene biosynthesis and their signalization pathways acting in these abiotic stresses.
- Recognition of molecular and genetic basis of *A. thaliana* ABI1 protein phosphatase coding gene – key element of ABA-dependent cell developmental processes and stress response.

Awards

Granting one year scholarship of Fullbrighta-Hays Foundation on Rutgers University and Texas A&M University, USA between 1979-1980.

Granting a training in „Cloning and analysis of HMW DNA” on Cold Spring Harbour Laboratory, USA, April 1993.

Member of Multinational Steering Committee of *Brassica* Genome Project, from 2003 – until now.

Local co-operation

- Department of Biotechnology, Institute of Molecular Biology and Biotechnology, Adam Mickiewicz University, Poznan
- Laboratory of Resistance Genetics, Institute of Plant genetics, Polish Academy of Sciences, Poznań

International cooperation

Universite de Perpignan/CNRS (France),

University of California (USA)

Rothamsted Research Institute, Harpenden (GB)

Training abroad:

- USA, Cold Spring Harbour Laboratory, 10 days, 1993
- USA, University of California, 2.5 year, 1993-1995
- USA, University of California, 2 moths., 1996
- Francja, Universite de Perpignan, 5 weeks, 1998
- Francja, Universite de Perpignan, 5 weeks, 1999
- Francja, Universite de Perpignan, 4 weeks, 2000
- Chiny, Chongqing University, wykłady, 2 weeks 2002
- Great Britain, John Innes Centre, Norwich, 1 week, 2002
- W. Brytania, Oxford University, 1 week, 2006

List of significant publications:

WRÓBLEWSKI T., COULIBALY S., SADOWSKI J., QUIROS C.F. (2000) Variation and phylogenetic utility of the *Arabidopsis thaliana* Rps2 homolog in various species of the tribe *Brassicaceae*. *Molecular Phylogenetics and Evolution* 16: 440-448 (IF=3.994)

BABULA D., KACZMAREK M., DELSENY M., QUIROS C.F., SADOWSKI J. (2000) Construction of a genetic map for *Brassica oleracea* based on ESTs from the *Arabidopsis thaliana* genome. *Acta Hort.* 539: 95-99

BABULA D., KACZMAREK M., ZIÓLKOWSKI P., SADOWSKI J. (2000) Application of chromosomal map and gene probes of *Arabidopsis* in studies on *Brassica* genomes. *NATO Science Series, Ser.A, Life Sciences* (Geza Hrazdina ed.) 319: 70-75

QUIROS C.F., GRELLET F., SADOWSKI J., SUZUKI T., LI G., WRÓBLEWSKI T. (2001) *Arabidopsis* and *Brassica* comparative genomics: sequence, structure and gene content in the *ABI1-Rps2-Ckl* chromosomal segment and related regions. *Genetics* 157:1321-1330 (IF=4.001)

ZIÓLKOWSKI P., SADOWSKI J. (2002) FISH-mapping of rDNAs and *Arabidopsis* BACs on pachytene complements of selected Brassicas. *Genome* 45: 189-197 (IF=1,785)

JAKUBOWICZ M., SADOWSKI J. (2002) 1-Aminocyclopropane-1-carboxylate synthase - genes and expression. *Acta Physiol. Plant.* 24: 459-478 (IF=0,295)

BABULA D., KACZMAREK M., BAKARAT A., DELSENY M., QUIROS C.F., SADOWSKI J. (2003) Chromosomal mapping of *Brassica oleracea* based on ESTs from *Arabidopsis thaliana* Complexity of the comparative map. *Mol. Gen. Genomics* 268: 656-665 (IF=2,978)

ZIÓLKOWSKI P., BLANC G., SADOWSKI J. (2003) Structural divergence of chromosomal segments that arose from successive duplication events in the *Arabidopsis* genome. *Nucleic Acids Res.* 31: 1-12 (IF=6,954)

LUDWIKÓW A., GALLOIS P., SADOWSKI J. (2004) Ozone-induced oxidative stress response in *Arabidopsis*: transcription profiling by microarray approach. *Cell Mol Biol Lett.* 9: 829-842 (IF=1.676)

BAJSA J., MISZTAŁ L.H., SADOWSKI J. (2004) An attempt at characterisation of a protein with high affinity to the regulatory sequence TTCGACC in the PR-2D gene promoter. In: *Understanding the Plant Genome*, ed. J. Sadowski, Institute of Plant Genetics PAS, Poznań, 165-176

KOŚCIAŃSKA E., KALANTIDIS K., WYPIJEWSKI K., SADOWSKI J., TABLER M. (2005). Analysis of RNA Silencing in agroinfiltrated leaves of *Nicotiana benthamiana* and *Nicotiana tabacum*. *Plant Mol. Biol.* 59: 647-661 (IF 3.847)

ZIÓŁKOWSKI P.A., KACZMAREK M., BABULA D., SADOWSKI J. (2006). Genome evolution in *Arabidopsis/Brassica*: conservation and divergence of ancient rearranged segments and their breakpoints. *Plant J.* 47: 63-74 (IF 6.751)

BABULA D., MISZTAŁ L.H., JAKUBOWICZ M., KACZMAREK M., NOWAK W., SADOWSKI J. (2006) Genes involved in biosynthesis and signalisation of ethylene in *Brassica oleracea* and *Arabidopsis thaliana*: identification and genome comparative mapping of specific gene homologues. *Theor. Appl. Genet.* 112: 410-420 (IF 3.137)

LUDWIKÓW A., SADOWSKI J. (2008) Gene networks in plant stress response and tolerance. *Journal of Integrative Plant Biology* 10:1256-1267 (IF 0.671)

LUDWIKÓW A., KRASOWSKI K., MISZTAŁ L., SADOWSKI J. (2008) Makromacierze DNA i ich zastosowanie w badaniach ekspresji genów u roślin. *Biotechnologia* 4(83): 131-143

ZIÓŁKOWSKI P., KOCZYK G., GAŁGAŃSKI L., SADOWSKI J. (2009) Genome sequence comparison of Col and Ler lines reveals the dynamic nature of *Arabidopsis* chromosomes. *Nucleic Acids Res.* 1-13 doi:10.1093/nar/gkp183 (in press)(IF=6,954)

KACZMAREK M., KOCZYK G., ZIÓŁKOWSKI P.A., BABULA-SKOWROŃSKA D., SADOWSKI J. (2009) Comparative analysis of the *Brassica oleracea* genetic map and the *Arabidopsis thaliana* genome. *Genome* (accepted for publication)(IF=1,785)

Monographs

1. Babula D., Kaczmarek M., Ziółkowski P.A., Sadowski J. (2006). *Brassica oleracea*. W: Kole C (ed) *Genome Mapping & Molecular Breeding*. Vol. 5: Vegetables. Springer, Heidelberg, Berlin, New York, Tokyo (chapter, ~60 pages in one out of five volumes).
2. Sadowski J. (ed) (2004) *Understanding the Plant Genome*, PAGEN series Vol.3, Institute of Plant Genetics, Polish Academy of Sciences, Poznań, pages: 214.
3. Sadowski J. (ed) (2009) *Vegetable Brassicas*, Vol. 9 w serii: Genetics, Genomics and Breeding of Crop Plants, ed. serii: Kole C. i Abbott A. G., Publishers: Science Publishers, Inc., New Hampshire, Jersey, Plymouth, vol. 9, 400 pages (published in 2009)

Participation in national projects:

Grant KBN (6 P06A 039 20) „Physical mapping of Brassica pachyten chromosomes with *Arabidopsis thaliana* BAC clones and FISH technique.” 01.02.2001 -31.01.2002.

Grant KBN (6 P06A 009 21). „Analysis of organization of *Brassica oleracea* L. chromosomes based on known *Arabidopsis thaliana* genetic probes and genome map.”, 2001-2003.

Grant KBN (3P06A03624): “Molecular and genetic analysis of drought stress response in Brassicaceae family”. 01.05.2003 -30.04.2006.

Grant KBN (029/P06/0.10): „Chromosome mapping of genes resistant to abiotic and biotic stresses in Brassica crop species.” 01.10.2001-30.09.2004.

Grant (PBZ-KBN-089/P06/2003): „Functional analysis of selected drought stress response genes in Brassicaceae family: gene expression silencing using RNAi techniques.” 01.01.2004-31.12.2006

Grant MNI (2P04A03329): "Biochemical and molecular analysis of insertional mutant *abi1*; gene coding for protein phosphatase 2C". 19.10.2005-18.10.2006.

PBZ-MNiSW-2/3/2006/19, New molecular genetics and genomics methods to improve crop species, "Evaluation and modification of drought stress adaptative properties of winter rape (*Brassica napus* var. *oleifera* L.) using functional genomic methods", 21.08.2007-20.08.1010.