

dr Sylwia Świgońska

RESEARCH INTERESTS

- Molecular regulation of reproductive functions in mammals.
- The molecular mechanism of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) action in reproductive organs.
- The role of the aromatic hydrocarbon receptor (AhR) in the regulation of ovarian function.
- The mechanism of tamoxifen protective action in the ovary of tumor-bearing rats treated with chemotherapy.
- Proteomics and mass spectrometry

ORIGINAL RESEARCH ARTICLES

1. Swigonska S, Weidner S., Proteomic analysis of response to long-term continuous stress in roots of germinating soybean seeds (2013), *Journal of Plant Physiology* , 170(5):470-9.
2. Nynca A, Swigonska S, Piasecka J, Kolomycka A, Kaminska B, Radziewicz-Pigiel M, Gut-Nagel M, Ciereszko RE. Biochanin A affects steroidogenesis and estrogen receptor- β expression in porcine granulosa cells. (2013) *Theriogenology* 80:821-828.
3. Badowiec A, Swigonska S, Weidner S. Changes in the protein patterns in pea (*Pisum sativum*, L.) roots under long- and short-term chilling stress and post-stress recovery. (2013) *Plant Physiology and Biochemistry* 71:315-324.
4. Swigonska S, Badowiec A, Mostek A, Krol A, Weidner S. Formation and stability of polysomes and polysomal populations in roots of germinating seeds of soybean (*Glycine max*, L.) under cold, osmotic and combined cold and osmotic stress conditions. (2014) *Acta Physiologiae Plantarum* 36 (3):651-662.
5. Swigonska S, Amarowicz R, Mostek A, Krol A, Badowiec A, Weidner A. Changes in the composition of phenolic compounds and properties of antioxidants in soybean roots under abiotic stress followed by recovery. (2014) *Acta Societatis Botanicorum Poloniae* 83(3):209–218.
6. Juchno D, Jabłońska O, Boroń A, Kujawa R, Leska A, Grabowska A, Nynca A, Swigonska S, Król M, Spóz A, Laskowska N, Lao M. Ploidy-dependent survival of progeny arising from crosses between natural allotriploid *Cobitis* females and diploid *C. taenia* males (*Pisces, Cobitidae*) (2015) *Genetica* 142 (4):351-359.
7. Sadowska A, Nynca A, Korzeniewska M, Piasecka-Srader J, Jablonska M, Orłowska K, Swigonska S, Ciereszko RE. (2015) Characterization of porcine granulosa cell line AVG-16. *Folia Biologica Praha* 61:184-194.
8. Sadowska A, Paukzto L, Nynca A, Szczerbal I, Orłowska K, Swigonska S, Jablonska M, Molcan T, Jastrzebski JP, Panasiewicz G, Ciereszko RE. Transcript variations, phylogenetic tree

and chromosomal localization of the porcine aryl hydrocarbon receptor (AhR) and AhR nuclear translocator (ARNT) genes. (2016) *Journal of Genetics* 96 (1):75-85.

9. Orłowska K, Molcan T, Swigonska S, Sadowska A, Jabłowska M, Nynca A, Jastrzebski JP, Ciereszko RE, The tertiary structures of porcine AhR and ARNT proteins and molecular interactions within the TCDD/AhR/ARNT complex (2016), *Journal of Molecular Graphics & Modelling*, 67, 119-126.
10. Molcan T, Swigonska S, Orłowska K, Myszczyński K, Nynca A, Sadowska A, Ruszkowska M, Jastrzebski JP, Ciereszko R, Structural-functional adaptations of porcine CYP1A1 to metabolize polychlorinated dibenzo-*p*-dioxins (2017), *Chemosphere*, 168, 205-216.
11. Sadowska A, Nynca A, Ruszkowska M, Paukzto L, Myszczyński K, Orłowska K, Swigonska S, Molcan T, Jastrzebski JP, Ciereszko RE, Transcriptional profiling of porcine granulosa cells exposed to 2,3,7,8- tetrachlorodibenzo-*p*-dioxin (2017), *Chemosphere*, 178, 368-377.
12. Ruszkowska M, Nynca A, Paukzto L, Sadowska A, Swigonska S, Orłowska K, Molcan T, Jastrzebski JP, Ciereszko RE. Identification and characterization of long non-coding RNAs in porcine granulosa cells exposed to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2018), *Journal of Animal Science and Biotechnology*, 9:72.
13. Orłowska K, Swigonska S, Sadowska A, Ruszkowska M, Nynca A, Molcan T, Ciereszko RE, The effects of 2,3,7,8- tetrachlorodibenzo-*p*-dioxin on the proteome of porcine granulosa cells (2018), *Chemosphere*, 212, 170-181.
14. Molcan T, Swigonska S, Nynca A, Sadowska A, Orłowska K, Ruszkowska M, Ciereszko RE, Is CYP1B1 involved in the metabolism of dioxins in the pig? (2019), *Biochimica et Biophysica Acta-general subjects*, 1863(2), 291-303.
15. Nynca A, Sadowska A, Paukzto L, Molcan T, Ruszkowska M, Swigonska S, Orłowska K, Myszczyński K, Jastrzebski JP, Ciereszko RE. (2019) Temporal changes in the transcriptomic profile of granulosa cells of pigs treated with 2,3,7,8-tetrachlorodibenzo-*p*-dioxin. *Animal Reproduction Science*, 207:83-94.
16. Orłowska K, Swigonska S, Sadowska A, Ruszkowska M, Nynca A., Molcan T, Zmijewska A, Ciereszko RE, Change s of aryl hydrocarbon receptor (AhR)-silenced porcine granulosa cells exposed to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) (2019) *PLOS One*, 14(10), e0223420.
17. Ruszkowska M, Sadowska A, Nynca A, Orłowska K, Swigonska S, Molcan T, Paukzto L, Jastrzebski JP, Ciereszko RE. The effects of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) on the transcriptome of aryl hydrocarbon receptor (AhR) knock-down porcine granulosa cells, (2020) *PEERJ*, 8, e8371.
18. Sadowska A , Nynca A, Ruszkowska M, Paukzto L, Myszczyński K, Swigonska S, Orłowska K, Molcan T, Jastrzebski JP, Ciereszko RE. Transcriptional profiling of Chinese hamster ovary (CHO) cells exposed to 2,3,7,8- tetrachlorodibenzo-*p*-dioxin (TCDD) (2021), *Reproductive Toxicology*, 104, 143-154.
19. Swigonska S, Molcan T, Nynca A, Ciereszko RE. The involvement of CYP1A2 in biodegradation of dioxins in pigs. (2022), *PLOS One*; 17(5): e0267162.

20. Knapczyk-Stwora K, Nynca A, Swigonska S, Pauksto L, Jastrzebski JP, Witek P, Kozirowski M, Slomczynska, M. (2022). Effects of neonatal methoxychlor exposure on the ovarian transcriptome in piglets. *Animal Reproduction Science*; 238,106956.

SCIENTIFIC PROJECTS

- 1/ 2871/E-383/SPB/COST/P-06/DWM58/2004-2007 Defense mechanisms and secondary metabolism of plants (2004-2007); main investigator.
- 2/ COST 858, 117/N-COST/2008/0 Changes in the composition of phenolic compounds and antioxidant properties of *Vitis vinifera* roots under the influence of cold and drought stress and post-stress recovery (2006-2009); investigator.
- 3/ COST FA0603 Plant proteomics in Europe (2007-2011); investigator.
- 4/ NN310776440 Changes in metabolome and proteome of seedlings from various breeding species under abiotic stress (2011-2014); investigator.
- 5/ OPUS NCN, nr UMO-2012/05/B/NZ9/03333 Physiological and toxicological aspects of the aryl hydrocarbon receptor (AhR) activation in the regulation of granulosa cell function in pigs (2012-2015); co-author and main investigator.
- 6/ SONATA NCN 2012/07/D/NZ4/04177 Molecular mechanisms of gonadotropic activity of pig pituitary gland during cycle and early pregnancy (2013-2017); investigator.
- 7/ OPUS NCN 2015/17/B/NZ6/03473 The role of plasma gelsolin in the pathogenesis and treatment of septic shock (2015-2018); investigator.
- 8/ OPUS NCN UMO-2016/21/B/NZ4/00202 The protective role of tamoxifen in the ovary during chemotherapy (2016-2019); co-author and main investigator.
- 9/ OPUS NCN UMO-2020/37/B/NZ9/00651 Determination of antihyperglycemic properties of betalains (2021-2023); investigator.

RESEARCH EXPERTISE

- cell cultures,
- cell transfections, gene silencing and knock-outs
- FISH,
- flow cytometry,
- ELISA,
- laser microdissection,
- immunohistochemistry,
- immunocytochemistry,
- RT-PCR, RNA-Seq,
- 2D electrophoresis, 2D-DIGE,
- MALDI-TOF mass spectrometry,
- HPLC-Q-TOF mass spectrometry,
- Western blot.