

Curriculum Vitae

Personal information

Name: **Guzewska Maria Marta**

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Education

2016–2021: Ph.D. Studies, Department of Hormone Action Mechanisms, Institute of Animal Reproduction and Food Research, Polish Academy of Sciences, Olsztyn (IRZBŻ PAN, Olsztyn); Dissertation Title: *Biogenesis and Release of Extracellular Vesicles in Embryo- Maternal Communication During Early Pregnancy in Pigs*

2014–2016: M.Sc. Studies, University of Warsaw, Faculty of Biology, Specialization: Cell and Organismal Biology; Master's Thesis Title: *How Does ICM Cell Differentiation Proceed in Embryos Injected with ES Cells?*

2011–2014: B.Sc. Studies, University of Warsaw, Faculty of Biology, Specialization: Cell and Organismal Biology; Bachelor's Thesis Title: *How Do Blastomere Divisions Proceed in 8-Cell Mouse Embryos Injected with ES Cells?*

Professional experience

2024–present: Senior Specialist, Department of Hormone Action Mechanisms, IRZBŻ PAN, Olsztyn

2021–2024: Specialist, Department of Hormone Action Mechanisms, IRZBŻ PAN, Olsztyn

2019–2020: Technologist, Department of Hormone Action Mechanisms, IRZBŻ PAN, Olsztyn

2019: Technologist, Molecular Biology Laboratory, IRZBŻ PAN, Olsztyn

Research interests

Reproductive Biology, Embryo-Maternal Communication, Extracellular Vesicles, microRNA, Confocal and Electron Microscopy, Flow Cytometry

Projects

2020–present: *Milky Way to Reproductive Success: Role of Leptin in the Programming of Reproductive Functions Across Generations* (NCN OPUS 2018/31/B/NZ4/03527); Project Leader: Prof. Monika M. Kaczmarek; Role: Investigator

2019–2022: *Role of microRNAs and Prostaglandins in the Regulation of Extracellular Vesicle Biogenesis in Porcine Trophoblast Cells: In Vitro Studies* (NCN PRELUDIUM/2018/29/N/NZ9/02331); Role: Project Leader and Main Investigator

2018–2019: *Egg Laying and Mating in D. melanogaster* (Research Fund, IRZBŻ PAN, Olsztyn); Project Leader: Prof. Monika M. Kaczmarek; Role: Main Investigator

2017–2018: *Nutritional Programming of Reproductive Functions During Lactation: Altered Milk Composition as a Programming Factor* (KNOW2017/IRZiBŻ/GG/01/2, KNOW, 2017-2018); Project Leader: Prof. Monika M. Kaczmarek; Role: Main Investigator

2016–2019: *Autocrine, Juxtacrine, and Paracrine Actions of miRNAs in Early Pregnancy Stages in Pigs* (NCN OPUS/2014/15/B/NZ9/04932); Project Leader: Prof. Monika M. Kaczmarek; Role: Main Investigator

2016–2019: *The Involvement of Biosynthesis Pathway Elements, Release, and Horizontal Transfer of Extracellular Vesicles in Embryo-Maternal Communication During Early Pregnancy* (KNOW2016/IRZBŻ/PRO1/01/5); Project Leader: Prof. Monika M. Kaczmarek; Role: Main Investigator

2014–2016: *The First Developmental Decisions: Cell Differentiation in Preimplantation Mouse Embryo* (NCN OPUS 2013/09/B/NZ3/02404); Project Leader: Prof. Marek Maleszewski; Role: Investigator

Scientific publications

1. Myszczyński K, Szuszkiewicz J, Krawczyński K, Sikora M, Romaniewicz M, **Guzewska MM**, Zabielski P, Kaczmarek MM. *In-depth analysis of miRNA binding sites reveals the complex response of uterine epithelium to miR-26a-5p and miR-125b-5p during early pregnancy*. *Molecular & Cellular Proteomics*, 2024 (accepted)
2. **Guzewska MM**, Myszczyński K, Heifetz Y, Kaczmarek MM. *Embryonic signals mediate extracellular vesicle biogenesis and trafficking at the embryo-maternal interface*. *Cell Communication and Signaling*, 2023 Aug; 21(1):210. doi: [10.1186/s12964-023-01221-1](https://doi.org/10.1186/s12964-023-01221-1)
3. **Guzewska MM**, Witek KJ, Karnas E, Rawski M, Zuba-Surma E, Kaczmarek MM. *miR-125b-5p impacts extracellular vesicle biogenesis, trafficking, and EV subpopulation release in the porcine trophoblast by regulating ESCRT-dependent pathway*. *FASEB J.* 2023 Aug;37(8):e23054. doi: [10.1096/fj.202300710R](https://doi.org/10.1096/fj.202300710R)

4. **Guzewska MM**, Szuszkiewicz J, Kaczmarek MM. *Extracellular vesicles: Focus on peri-implantation period of pregnancy in pigs*. Mol Reprod Dev. 2023 Jan;90(7):634-645. doi: [10.1002/mrd.23664](https://doi.org/10.1002/mrd.23664)
5. Kaczmarek MM, Reliszko ZP, Szuszkiewicz J, Nitkiewicz A, **Guzewska MM**, Myszczyński K, Romaniewicz M, Sikora M, Kajko M, Heifetz Y. *Profiling circulating microRNAs in the serum of pregnant and non-pregnant pigs reveals a plethora of reproductive status-dependent microRNAs*. Animal. 2021 Apr;15(4):100182. doi: [10.1016/j.animal.2021.100182](https://doi.org/10.1016/j.animal.2021.100182)
6. Kaczmarek MM, Najmula J, **Guzewska MM**, Przygodzka E. *MiRNAs in the Peri-Implantation Period: Contribution to Embryo-Maternal Communication in Pigs*. Int J Mol Sci. 2020 Mar;21(6):2229. doi: [10.3390/ijms21062229](https://doi.org/10.3390/ijms21062229)
7. Humięcka M, Krupa M, **Guzewska MM**, Maleszewski M, Suwińska A. *ESCs injected into the 8-cell stage mouse embryo modify pattern of cleavage and cell lineage specification*. Mech Dev. 2016 Aug;141:40-50. doi: [10.1016/j.mod.2016.06.002](https://doi.org/10.1016/j.mod.2016.06.002)

Research internships

2017–2018: Department of Entomology, The Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel (5 weeks)

2021–2022: Department of Entomology, The Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel (3 weeks; 2 stays)

Membership in scientific societies

Since 2018: Society for the Study of Reproduction

Since 2016: Society of Reproductive Biology

Conference presentations

Past Presentations:

1. *"Metabolic characterization of sperm after early-life exposure to malnutrition"* Society for the Study of Reproduction – 57th Annual Meeting; Dublin, Ireland, July 2024 (poster presentation) | Presenting Author
2. *"Sex-specific consequences of poor early-life parental nutrition on the reproductive performance across two generations of mice"* Society for the Study of Reproduction – 57th Annual Meeting; Dublin, Ireland, July 2024 (poster presentation) | Co-Author
3. *"Like Mother, Like Daughter: Multigenerational effect of early-life malnutrition on female mice phenotype and oocyte energetic capacity"* Society for the Study of Reproduction – 57th Annual Meeting; Dublin, Ireland, July 2024 (abstract accepted) | Co-Author
4. *"miR-125b-5p – embryonic non-transcriptional mediator of EVs biogenesis and secretion"* Polish RNA Biology Meeting; Warsaw, Poland, September 2023 (poster presentation) | Presenting Author
5. *"Multivesicular bodies trafficking and distribution at the embryo-maternal interface during early pregnancy"* EMBO Workshop: When Biology of Endocytosis Meets Physics: Emerging Mechanisms and Functions; Venice, Italy, September 2023 (poster presentation) | Presenting Author
6. *"miR-125b-5p affects molecular and morphological parameters of extracellular vesicles released by porcine trophoblast cells in vitro"* 11th International Conference on Pig Reproduction; Ghent, Belgium, June 2023 (oral presentation) | Presenting Author
7. *"Fast-acting miRNAs – new insights into regulation of extracellular vesicles biogenesis at the embryo-maternal interface"* Society for the Study of Reproduction – 55th Annual Meeting; Spokane, USA, July 2022 (oral presentation) | Presenting Author
8. *"Embryonic non-transcriptional regulation – miR-125b negative feedback loop on extracellular vesicles biogenesis pathways and vesicles distribution"* Society for the Study of Reproduction – 54th Annual Meeting; St. Louis, USA, December 2021 (oral presentation) | Presenting Author
9. *"VPS36, a member of ESCRT-II: a crucial checkpoint for extracellular vesicles biogenesis in the uterine luminal epithelium during pregnancy"* IX Meeting of the Polish Society for Reproductive Biology; Poznań, Poland, April 2021 (oral presentation) | Presenting Author
10. *"Secretion patterns of extracellular vesicles during early pregnancy in the pig – in situ transmission electron microscopy study"* Winter School of the Polish Society for Reproductive Biology; Zakopane, Poland, February 2019 (oral presentation) | Presenting Author
11. *"Expression and localization of extracellular vesicles biogenesis pathway elements in the porcine endometrium and conceptuses"* Endometritis as a Cause of Infertility in Domestic Animals; Olsztyn, Poland, September 2018 (oral presentation) | Presenting Author
12. *"Localization of extracellular vesicles biogenesis pathway elements in the porcine endometrium and conceptuses"* Summer School of the KNOW Scientific Consortium "Safe Animal, Safe Food"; Kazimierz Dolny, Poland, September 2018 (oral presentation) | Presenting Author

13. "Expression and localization of extracellular vesicles biogenesis pathway elements in the porcine endometrium and conceptuses" Society for the Study of Reproduction – 51st Annual Meeting; New Orleans, USA, July 2018 (oral presentation) | Presenting Author
14. "Localization of extracellular vesicles biogenesis pathway elements in the porcine endometrium and conceptuses" II Meeting of the KNOW Scientific Consortium "Safe Animal, Safe Food"; Wierzba, Poland, June 2018 (oral presentation) | Presenting Author
15. "Expression and localization of extracellular vesicles biogenesis pathway elements in the porcine endometrium and conceptuses" VIII Meeting of the Polish Society for Reproductive Biology; Olsztyn, Poland, September 2017 (poster presentation) | Presenting Author

Awards

- **Prof. Władysław Bielański Award**, X Congress of the Society for Reproductive Biology (Warsaw, Poland, 2024) – awarded to young scientists for a series of related studies in reproductive biology
- **EMBO Travel Grant**, Workshop: *When Biology of Endocytosis Meets Physics: Emerging Mechanisms and Functions* (Venice, Italy, 2023)
- **Best International Abstract**, *Embryonic Nontranscriptional Regulation – miR-125b Negative Feedback Loop on Extracellular Vesicle Biogenesis Pathways and Vesicle Distribution*, Society for the Study of Reproduction – 54th Annual Meeting (St. Louis, USA, 2021)
- **Best Oral Presentation**, *VPS36, a Member of ESCRT-II: A Crucial Checkpoint for Extracellular Vesicle Biogenesis in the Uterine Luminal Epithelium During Pregnancy*, IX Congress of the Society of Reproductive Biology (Poznań, Poland, 2021)

Scientific courses

- Innovative Solutions for Mammalian Cell Culture (Merck, 2019)
- Application of Statistics in Empirical Research Planning and Data Analysis in Statistica (StatSoft Poland, 2018)

Popular science activities

- European Researchers' Night, EIT FOOD (2019)
- European Researchers' Night – FUSION NIGHT (2016, 2017, 2018)
- Science Picnic "SCIENCE is ART!" (2017)
- 19th Science Picnic of Polish Radio and Copernicus Science Centre – "Light" (2015)

Organization of conferences and scientific workshops

- EIT Food RIS Research Infrastructure Network – edition 2022
- VIII Congress of the Society of Reproductive Biology, Olsztyn, Poland, September 7–9, 2017