

CURRICULUM VITAE

Personal Details

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Appointments

- Dec 2017 – present Group leader in the Center for Anatomy and Cell Biology at the **Medical University of Vienna, Austria**
- 2012 – 2017 Postdoctoral researcher in the laboratory of Prof. Dr. Reijo Pera, Prof. Dr. Joanna Wysocka & Prof. Dr. Vittorio Sebastiano at Institute for Stem Cell Biology & Regenerative Medicine, School of Medicine, **Stanford University, USA**
- 2015 – 2016 Siebel Scholar at Institute for Stem Cell Biology & Regenerative Medicine, School of Medicine, **Stanford University, USA**
- 2006 – 2011 Ph.D. student in the Genetic/Epigenetic laboratory of Prof. Dr. Jörn Walter at **University of Saarland, Germany**
Ph.D. thesis: “Epigenetic Reprogramming of DNA Methylation in the early embryogenesis of mouse”, *Summa cum laude*

Research / Areas of Expertise

My current research focus is to understand the embryo intrinsic epigenetic (re-)programming that underlies early cell fate decisions and in particular the development of cellular potency. A long-term objective of my studies is to understanding the impact of our environment (metabolites, aging, etc.) on epigenetic programming and translating the knowledge gained to improve the generation of pluripotent cells for regenerative medicine and the treatment of epigenetically-based common human pathologies. Understanding epigenetic reprogramming *in vivo* in the early embryo will open up a new era of epigenomic therapy in reproductive and regenerative medicine and will broaden the understanding of fundamental epigenetic mechanisms in developmental biology.

Publications (peer reviewed)

- Eleftheriou, K., Peter, A., Fedorenko, I., Schmidt, K., **Wossidlo M.**, Arand, J. (2022). A transition phase in late mouse oogenesis impacts DNA methylation of the early embryo. *Commun Biol.* 2022 Oct 2;5(1):1047; doi: 10.1038/s42003-022-04008-1.
- Arand, J., Chiang, H.R., Martin, D., Snyder, M.P., Sage, J., Reijo Pera, R.A., **Wossidlo, M.** (2022). Tet enzymes are essential for early embryogenesis and completion of embryonic genome activation. *EMBO Rep.* 2022 Feb 3;23(2):e53968; doi: 10.15252/embr.202153968.
- Arand, J., Reijo Pera, R. A. & **Wossidlo, M.** (2021). Reprogramming of DNA methylation is linked to successful human preimplantation development. *Histochem Cell Biol.* Doi: 10.1007/s00418-021-02008-6.
- Srinivasan R, Nady N, Arora N, Hsieh LJ, Swigut T, Narlikar GJ, **Wossidlo M***, Wysocka J*. Zscan4 binds nucleosomal microsatellite DNA and protects mouse two-cell embryos from DNA damage. *Science Advances.* 2020 Mar 20; doi: 10.1126/sciadv.aaz9115. **corresponding authors*
- Glinsky G*, Durruthy-Durruthy J*, **Wossidlo M***, Grow EJ, Weirather JL, Au KF, Wysocka J, Sebastiano V. Single cell expression analysis of primate-specific retroviruses-derived HPAT lincRNAs in viable human blastocysts identifies embryonic cells co-expressing genetic markers of multiple lineages. *Heliyon.* 2018 Jun 28;4(6):e00667. **co-first authors*
- Manuela M, Alberto C, Reijo Pera RA, Redi CA, **Wossidlo M.** Functional topography of the fully grown human oocyte. *Eur J Histochem.* 2017 Feb 6;61:2769. doi: 10.4081/ ejh.2017.2769.
- Durruthy-Durruthy J*, **Wossidlo M***, Pai S, Takahashi Y, Kang G, Omberg L, Chen B, Nakauchi H, Reijo Pera RA, Sebastiano V. Spatiotemporal Reconstruction of the Human Blastocyst by Single-Cell Gene-Expression Analysis Informs Induction of Naïve Pluripotency. *Dev Cell.* 2016 Jul 11;38(1):100-15. doi: 10.1016/j.devcel.2016.06.014. **co-first authors.*
- Qin H, Hejna M, Liu Y, Percharde M, **Wossidlo M**, Blouin L, Durruthy-Durruthy J, Wong P, Qi Z, Yu Q, Qi LS, Sebastiano V, Song JS, Ramalho-Santos M. YAP induces human naïve pluripotency. *Cell Rep.* 2016 Mar 15(10):2301-2312. doi: 10.1016/ j.celrep.2016.02.036.
- Durruthy-Durruthy J[#], Sebastiano V[#], **Wossidlo M**, Cepeda D, Grow EJ, Quinn J, Weirather J, Torrez LB, Wong W, Chang H, Wysocka J, Au KF and Reijo Pera RA. The primate-specific noncoding RNA HPAT5 regulates pluripotency during human preimplantation development and nuclear reprogramming. *Nat Genet.* 2016 Jan 48(1):44-52. doi: 10.1038/ng.3449. *#co-first authors*
- Grow EJ, Flynn RA, Chavez SL, Bayless NL, **Wossidlo M**, Wesche D, Martin L, Ware C, Blish C, Chang HY, Reijo Pera RA, and Wysocka J. Intrinsic retroviral reactivation in human preimplantation embryos and pluripotent cells. *Nature.* 2015 Jun 11;522(7555):221-5. doi: 10.1038/nature14308.

Arand J, **Wossidlo M**, Lepikhov K, Peat J, Reik W, Walter J. Selective impairment of methylation maintenance is the major cause of DNA methylation reprogramming in the early embryo. *Epigenetics & Chromatin*. 2015 Jan 9;8(1):1. doi: 10.1186/1756-8935-8-1.

Lange UC, Siebert S, **Wossidlo M**, Weiss T, Ziegler-Birling C, Walter J, Torres-Padilla ME, Daujat S, Schneider R. Dissecting the role of H3K64me3 in mouse pericentromeric heterochromatin. *Nature Commun*. 2013;4:2233. doi: 10.1038/ncomms3233.

Wossidlo M, Nakamura T, Lepikhov K, Marques C.J, Zakhartchenko V, Boiani M, Arand J, Nakano T, Reik W, Walter J. 5-Hydroxymethylcytosine in the mammalian zygote is linked with epigenetic reprogramming. *Nature Commun*. 2011;2: 241. doi: 10.1038/ncomms1240. *This work was awarded by the Faculty of 1000.*

Lepikhov K, **Wossidlo M**, Arand J, Walter J. DNA methylation reprogramming and DNA repair in the mouse zygote. *Int J Dev Biol*. 2010;54(11-12):1565-74.

Wossidlo M*, Arand J*, Sebastiano V, Lepikhov K, Boiani M, Reinhardt R, Scholer H, Walter J. Dynamic link of DNA demethylation, DNA strand breaks and repair in mouse zygotes. *EMBO J*. 2010 Jun 2;29(11): 1877-88. doi: 10.1038/emboj.2010.80. **co-first authors*

Publications (book chapters)

Lepikhov K, Arand J, Fuchs S, Lan J, **Wossidlo M**, Walter J. DNA Methylation Reprogramming in Preimplantation Development. *Epigenetic Mechanisms in Cellular Reprogramming*, 2015.

Lepikhov K, Arand J, **Wossidlo M**, Walter J. Epigenetic Reprogramming in Mammalian Development. *Encyclopedia of Molecular Cell Biology and Molecular Medicine*, 2011.

Arand J, Lepikhov K, **Wossidlo M**, Walter J. 2010 Active DNA demethylation - the enigma starts in the zygote. *Epigenomics: From Chromatin Biology to Therapeutics*, 2010.

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