

Publications

Five Selected Papers with Statements

Kloubert, et al., J Trace Elements Med and Biol (2018)

This publication is the first as senior author and mirrors my interest in animal nutrition with a scope on early development of the immune system. Due to the high homology of immune systems of pigs and humans, obtained results are probably transferable to the human system opening new nutrition related therapeutic approaches to support early development and prevent disease. It also shows my ability to coordinate a project with several different international laboratories

Wessels, I. Handbook of Nutrition, Diet, and Epigenetics (2017):

This invited contribution is a symbol for my recognition in the field. Moreover, it underlines my continuous interest and increasing expertise in the field of nutritional epigenetics. It also provides an overview on epigenetically active minderals, which might become my future objects of research.

Wessels and Cousins, Am. J Physiol Gastrointest Liver Physiol (2015)

This is the first paper of a project as principal investigator and presents my first data attained in a foreign research environment. This project gave me the opportunity to transfer my in vitro data to an in vivo situation and evaluate my research hypothesis, i.e. the benefits of zinc supplementations to ameliorate severity of polymicrobial sepsis.

Wessels, et al., J Nutr Biochem. (2013a)

After several rounds of revision and unclear rejection, I was finally able to publish my first paper in the nutritional field, as data describe that zinc can alter gene expression via its effect on epigenetic mechanism. It also underlines my quick and continuous recovery from major draw backs as well as strong believe in my research

Mey et al., Glia (2007)

My first contribution to a scientific paper, introducing me to the scientific world. It reflects my early interests in finding nutrition-related molecular mechanisms for diseases and perfectly fits into my ongoing aim to develop nutrition-related therapeutic options. I met Professor Mey in a seminar, which I had chosen at the end of my Bachelor, as it was the only one in English and dealing with medical topics and decided to do my Bachelor thesis in his group

Complete List of Publications

Original Research

Aster, I., Rink, L., **Wessels, I.** The influence of zinc on granulocyte-macrophage-colony stimulating factor-induced signaling in U937 cells. *in preparation*

Wessels, I., Pupke, J. T, Grommes, J. Benefits of zinc supplementation in ameliorating neutrophil-induced lung damage in a murine model of acute lung injury. *in preparation*

Kulik, L., Maywald, M., Kloubert, V., **Wessels, I.**, Rink, L.: Zinc deficiency drives Th17 polarization and promotes loss of Treg cell-function: The Journal of nutritional biochemistry, DOI: 10.1016/j.jnutbio.2018.09.011, 2018

Kloubert, V., Blaabjerg, K., Dalgaard, T. S., Poulsen, H. D., Rink, L., and **Wessels, I.**: Influence of zinc supplementation on immune parameters in weaned pigs, J Trace Elements Med and Biol, 49, 231–240, doi:10.1016/j.jtemb.2018.01.006, 2018.

Lienau, S., Rink, L., and **Wessels, I.**: The role of zinc in calprotectin expression in human myeloid cells, J Trace Elements Med and Biol, 49, 106–112, doi:10.1016/j.jtemb.2018.04.022, 2018.

Trame, S., **Wessels, I.**, Haase, H., and Rink, L.: A short 18 items food frequency questionnaire biochemically validated to estimate zinc status in humans, J Trace Elements Med and Biol, 49, 285–295, doi:10.1016/j.jtemb.2018.02.020, 2018.

Kessels, J. E., **Wessels, I.**, Haase, H., Rink, L., and Uciechowski, P.: Influence of DNA-methylation on zinc homeostasis in myeloid cells: Regulation of zinc transporters and zinc binding proteins, J Trace Elements Med and Biol 37, 125–133, doi:10.1016/j.jtemb.2016.02.003, 2016.

Rosenkranz, E., Metz, C. H. D., Maywald, M., Hilgers, R.-D., **Wessels, I.**, Senff, T., Haase, H., Jäger, M., Ott, M., Aspinall, R., Plümäkers, B., and Rink, L.: Zinc supplementation induces regulatory T cells by inhibition of Sirt-1 deacetylase in mixed lymphocyte cultures, Molecular nutrition & food research, 60, 661–671, doi:10.1002/mnfr.201500524, 2016.

Wessels, I.; Cousins, R. J.: Zinc dyshomeostasis during polymicrobial sepsis in mice involves zinc transporter Zip14 and can be overcome by zinc supplementation. Am. J Physiol Gastrointest Liver Physiol 309 (9), G768-G778. DOI: 10.1152/ajpgi.00179.2015.

Poplutz, M. K., **Wessels, I.**, Rink, L., and Uciechowski, P.: Regulation of the Interleukin-6 gene expression during monocytic differentiation of HL-60 cells by chromatin remodeling and methylation, Immunobiology, 219, 619–626, doi:10.1016/j.imbio.2014.03.016, 2014.

Wessels, I.; Haase, H.; Engelhardt, G.; Rink, L.; Uciechowski, P. Zinc deficiency induces production of the proinflammatory cytokines IL-1 β and TNF α in promyeloid cells via epigenetic and redox-dependent mechanisms. J Nutr Biochem. 24 (1), pp. 289–297. DOI: 10.1016/j.jnutbio.2012.06.007. 2013

Wessels, I.; Rosenkranz, E.; Ventura Ferreira, M.; Neuss, S.; Zenke, M.; Rink, L.; Uciechowski, P.: Activation of IL-1 β and TNF α genes is mediated by the

- establishment of permissive chromatin structures during monoopoiesis. *Immunobiology* 218 (6), pp. 860–868. DOI: 10.1016/j.imbio.2012.10.011. 2013
- Wessels, I.**; Fleischer, D.; Rink, L.; Uciechowski, P.: Changes in chromatin structure and methylation of the human interleukin-1beta gene during monoopoiesis. In *Immunology* 130 (3), pp. 410–417. DOI: 10.1111/j.1365-2567.2009.03243. 2010
- Mey, J., Schrage, K., **Wessels, I.**, Vollpracht-Crijns, I.: Effects of inflammatory cytokines IL-1beta, IL-6, and TNFalpha on the intracellular localization of retinoid receptors in Schwann cells. *Glia* 55: 152-164. 2007

Review Articles and Book Chapters

- Wessels, I.** and Rink, L.: Zinc and Vitamin D as triggers and therapeutic options in autoimmune diseases. *JNB invited contribution, in preparation*
- Wessels, I.**; Maywald, M., Rink, L.: Zinc as a Gate Keeper of the Immune System. *Nutrients*, 9, doi:10.3390/nu9121286, 2017. *invited contribution*
- Maywald, M.; **Wessels, I.**; Rink, L.: Zinc Signals and Immunity. In *International journal of molecular sciences* 18 (10). DOI: 10.3390/ijms18102222, 2017 *invited contribution*
- Wessels, I.**: Epigenetics and Minerals. An Overview. In Vinood Patel, Victor Preedy (Eds.): *Handbook of Nutrition, Diet, and Epigenetics*. Cham: Springer International Publishing, pp. 1–19. Available online at https://doi.org/10.1007/978-3-319-31143-2_48-1. 2017 *invited contribution*
- Ollig, J.; Kloubert, V.; **Wessels, I.**; Haase, H.; Rink, L. Parameters Influencing Zinc in Experimental Systems in Vivo and in Vitro. In *Metals* 6 (3), p. 71. DOI: 10.3390/met6030071. 2016
- Wessels, I.**: Metal Homeostasis during Development, Maturation, and Aging, *Struengmann Forum Reports 16: Trace Metals and Infectious Diseases*, series ed. J. Lupp. Cambridge, MA: MIT Press. ISBN 978-0-262-02919-3. 2015 *invited contribution*
- Rehder, D., Black, R.E., Bornhorst, J., Dietert, R.R., DiRita, V.J., Navarro, M., Perry, R.D., Rink, L., Skaar, E.P., Soares, M.C.P., Thiele, D.J., Wang, F., Weiss, G., and **Wessels, I.** (2015) *Metals in Host–Microbe Interaction: The Host Perspective*. *Struengmann Forum Reports 16: Trace Metals and Infectious Diseases*, series ed. J. Lupp. Cambridge, MA: MIT Press. ISBN 978-0-262-02919-3. *invited contribution*
- Wessels, I.**: Epigenetics and Metal Deficiencies. *Curr Nutr Reports* 3 (3): 196-203. 2014 *invited contribution*

Wessels, I., Jansen, J., Rink, L., & Uciechowski, P.: Immunosenescence of polymorphonuclear neutrophils. *ScientificWorldJournal*. 10: 145-160. 2010 *invited contribution*

Wessels, I., Jansen, J., Rink, L., & Uciechowski, P.: Neutrophils: Phagocytes and Gatekeepers of Inflammation. In: *Neutrophils: Lifespan, Functions and Roles in Disease* (DeFranco, J. E., ed.), pp. 121-184. Nova Science Publishers, Inc. 2010

Oral Presentations

Talks, Lectures, Seminar Series and Poster

Wessels, I., Rink, L. Zinc and the Immune System XI ISIN London Conference on Immunonutrition. Immunonutrition in Health and Disease, London, United Kingdom, 09/2018, *invited lecture*

Wessels, I. Zinc in Inflammatory Diseases. Meeting of the German Society of Minerals and Trace Elements (GMS), Jena, Germany, 06/2018, *oral presentation*

Wessels, I. Zinc in Inflammatory Processes. Meeting of the German Society of Minerals and Trace Elements (GMS), Aachen, Germany, 09/2017, *invited oral presentation*

Lienau, S., Engelhardt, G., Rink, L., **Wessels, I.**, The role of zinc in calprotectin expression in human myeloid cells. Meeting of the German Society of Minerals and Trace Elements (GMS), Aachen, Germany, 09/2017, *poster*

Aster, I., Engelhardt, G., Rink, L., **Wessels, I.** The influence of zinc on granulocyte-macrophage-colony stimulating factor-induced signaling in U937 cells. Meeting of the German Society of Minerals and Trace Elements (GMS), 09/2017, *poster*

Trame S., **Wessels I.**, Plümäkers B., Engelhardt G., Rink, Development of a biochemically validated questionnaire and standardization of the biomarker serum zinc for the evaluation of the zinc supply. Meeting of the German Society of Minerals and Trace Elements (GMS), Aachen, Germany 09/2017 *poster*

Veronika K., **Wessels, I.** Immunological changes during zinc supplementation in pigs. International Society of Zinc Meeting, Pyla, Cyprus 06/2017, *poster*

Wessels, I., Zinc in Inflammatory Diseases. Meeting of the International Society of Zinc Biology (ISZB), Pyla, Cyprus, 06/2017, *invited oral presentation*

Wessels I.: Ein essentielles Toxin: der Einfluss von Zink auf die Gesundheit (2016). DACH Tagung der DGE, ÜGES und SGED, Munich, 26 – 28. Mai 2016, *invited oral presentation*

Wessels, I. Zinc in Sepsis and other Inflammatory Diseases, Seminar Series

Guts and Friends, University Hospital Aachen, Germany, 04/2016, *invited oral presentation*

Wessels, I. Changes in Zinc Homeostasis During Different Stages Of Sepsis. The 15th International Symposium on Trace Elements in Man and Animals (TEMA 15), Orlando, Florida, USA 06/2015, *oral presentation*

Wessels, I.: Zinc in Sepsis, GMS meeting, Frankfurt, Germany, 01/2014, *invited oral presentation*

Wessels, I., Fleischer, D., Rink, L, Uciechowski, P: Epigenetic changes in the human Interleukin-1 β gene during monopoiesis, Chromatin and Epigenetics Meeting, Essen, Germany, 2010, *poster*