

**Prof. Dr. rer. physiol et med. habil Ulrike Ritz**

\*13.12.1971

Head of research

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**Academia**

2023 APL-Prof., University Medical Centre, Mainz, Germany  
2018 Habilitation, University Medical Centre, Mainz, Germany  
2012 – 2016 Dr. rer. physiol. in Cancer Immunology, Mainz University, Germany  
1992 – 1997 Diploma in oecotrophology, 1992-1997, Justus-Liebig-University, Gießen, Germany

**Career**

since 2017 Head of Research, Department of Orthopedics and Traumatology, University Medical Centre, Mainz, Germany  
2004– 2016 Postdoctoral scientist and Project leader at Department of Orthopedics and Traumatology, University Medical Centre, Mainz, Germany – interrupted by 10 months of parental leave 2006  
2001– 2004 Postdoctoral scientist, I<sup>rst</sup>. Medical Department, University Medical Centre, Mainz, Germany

**Awards**

2024 Regional prize winner, idea maturity level 2, Rhineland-Palatinate 2024 ideas competition  
2024 Recognised as a network laboratory in the Musculoskeletal Regeneration Research Network in accordance with the guidelines of the Section for Basic Research of the German Society for Orthopaedics and Trauma Surgery  
2022 Best poster award, Experimental Work, DKOU (German Society for Orthopedics and Trauma Surgery)  
2019 Special medical prize in the Rhineland-Palatinate ideas competition

**Selected Publications**

1. Grandjean T, Heumüller N, Galata C, Emrich A, Martin M, Wiesmann-Imilowski N, Nickel D, Gercek E, Drees P, Roessner ED, Ritz U. 3D-printing on human acellular dermis for chest wall reconstructions-an *in vitro* and *in ovo* study. *J Thorac Dis.* 2026 Feb 28;18(2):106. doi: 10.21037/jtd-2025-767. Epub 2026 Feb 26.
2. Traub F, Panezai MA, Moisch M, Melke J, Schöbel L, Busse T, Xing F, Sun J, Ritz U. Effect of Photosensitiser Chlorin E6 on Cancerous Bone Tumor Cells Using Photodynamic Therapy. *Oncol Res.* 2026 Feb 24;34(3):15. doi: 10.32604/or.2025.071919. eCollection 2026.
3. Kottmann V, Drees P, Gercek E, Ritz U. Bone sialoprotein: a multifunctional regulator of bone remodelling and tumour progression. *Bone Res.* 2026 Jan 19;14(1):11. doi: 10.1038/s41413-025-00490-5.

4. Gaschik T, Eßbach C, Fischer D, Nickel D, Ritz U. Scalable multi-layer collagen laminates for regenerative medicine. *Biomater Adv.* 2025 Dec;177:214422. doi: 10.1016/j.bioadv.2025.214422. Epub 2025 Jul 25.
5. Cichos S, Schätzlein E, Wiesmann-Imilowski N, Blaeser A, Henrich D, Frank J, Drees P, Gercek E, Ritz U. A new 3D-printed polylactic acid-bioglass composite for bone tissue engineering induces angiogenesis *in vitro* and *in ovo*. *Int J Bioprint.* 2023 May 11;9(5):751. doi: 10.18063/ijb.751. eCollection 2023.

**Research Interests:** Fracture healing after severe trauma is still a problem for surgeons all over the world. New biomaterials, including materials from 3D (bio)printing represent an innovative solution for many problems in bone regeneration. The interaction between (implanted) biomaterials and the surrounding tissue as well as vascularization in these areas is the main focus of our research. Our group analyses the effects of biomaterials on primary cells and consequently in various *in ovo* and *in vivo* models of fracture healing to establish new implants for bone regeneration after severe trauma. In cooperation with material scientists new composite materials consisting of polysaccharide hydrogels, collagen gels and 3D printed polylactide scaffolds are produced and characterized. Moreover, established implant materials are modified with growth factors and / or antibiotics to improve tissue specific integration and regeneration. Another focus is on mechanisms of fracture healing, metastasis, bone remodelling and the cause of delayed healing by correlating molecular data to clinical outcome.