**Prof. Dr. Ernst Wagner**

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Professor and Chair for Pharmaceutical Biotechnology, LMU Munich (since 2001); Member of Munich Center of Nanoscience – CeNS (since 2005). Area Coordinator of “Biomedical Nanotechnologies” and Executive Board Member of German Excellence Cluster “Nanosystems Initiative Munich (NIM)” (since 2010). Director, Department of Pharmacy (since 2018 and 2006-2008), Deputy Director (2016-2018).

**Previous Professional Experiences and Education**

Director Cancer Vaccines & Gene Therapy, Boehringer Ingelheim Austria (1992-2001) with R&D and production of gene-modified cancer vaccines; in 1994 first-in-world polymer-based human clinical gene therapy trial. Group leader, Institute of Molecular Pathology, Vienna (1988-1995). Habilitation in Biochemistry at Medical Faculty, University of Vienna (1994). Postdoc at the Federal School of Technology (ETH) Zurich, Switzerland (1985-1987) working on sugar phosphates and origin-of-life chemistry. Ph. D. in Organic Chemistry, Technical University of Vienna (1985). Diploma studies in chemistry, TU Vienna (1978-1982). Born May 10, 1960 in Dachau (Germany). Austrian Citizenship.

**Guest Professorships and Honors**

Election as Academician of the European Academy of Sciences (2017). Honorary Professor of Sichuan University (2017). Election into Controlled Release Society (CRS) College of Fellows (2017). Guest Professorships at Sichuan University, Chengdu (2014-2017), Fudan University Key Laboratory, Shanghai (2012-2013), Utrecht University (1996). Phoenix Pharma Science Award 2014, Attocube Research Award 2012, Election into CRS Board of Scientific Advisors (2012), Honorary Member of BUON (2007).

**Other Activities**

Editor-in-Chief, *The* *Journal of Gene Medicine* (since 2016); Editor, *Pharmaceutical Research* (since 2008); Board Member, *German Society for Gene Therapy* (since 2007); current member of the *Nanoagents & Synthetic Formulations Committee*, and the *Physical Delivery Therapeutics & Vector Development Committee* of the *American Society of Gene and Cell Therapy (ASGCT).*

**Current Research Interests**

Bioinspired chemical evolution of drug delivery carriers. Design and synthesis of precise dynamic oligomers for targeted extra- and intra-cellular transfer of novel therapeutics, including drugs, proteins, nanobodies, or therapeutic nucleic acids (pDNA, mRNA, microRNA, siRNA, Cas9/sgRNA). Such novel nanostructures (conjugates, complexes, polymer micelles) resemble “synthetic viruses”. Like natural viruses, they contain functional subdomains for facilitating the various delivery steps, including packaging and protecting their therapeutic cargo, specific cell uptake and intracellular release. Our studies contributed a better understanding of their bio-interaction (receptor targeting, shielding against blood components, endosomal escape). Cancer is our primary focus, for meeting an urgent medical need for tumor-targeted delivery, precision gene therapy is another main focus.

**Publication Record**

≥ 448 publications and ≥ 20 patents; ≥ 264 international lectures, h-index =76 (web of science)   
Google Scholar: h-index = 100, >40,250 citations

**Support of Young Researchers**

74 PhD students (from many nations, including 4 CSC student fellows) graduated successfully under his supervision, 15 currently active PhD students; currently 2 junior group leaders, 3 postdoctoral fellows. Nine academics under his former supervision (PhD students or postdocs) received a professorship.

**Grants (last 5 years)**

Since 2019 European Community, Unlocking Precision Gene Therapy (UPGRADE)

Since 2017 DFG SFB1066 ‘Nanodimensional Polymer Therapeutics for Tumor Therapy‘, Project B5

Since 2013 DFG SFB824 ‘Polyplexes for systemic NIS gene transfer’, co-PI with Prof. Ch. Spitzweg

Since 2012 DFG SFB1032 Nanoagents, projekt B4 ‘Molecular nanoagents utilizing the intracellular microRNA machinery for switching functions in cells’, extension in 2016

2006-2019 German Network of Excellence, Excellence Cluster ‘Nanosystems Initiative Munich (NIM)’

2014-2017 SinoGermanCenter project ‘Novel peptide-modified precise oligomers for cascade-targeting gene therapy of glioma’ (with Fudan U / Prof. R. Huang)

2010-2018 DFG Research Group FOR 1406 ‘Exploiting the potential of natural compounds: Myxobacteria as source for therapeutic leads and chemical tools in cancer research.’

2012-2017 European Community, Innovative Medicines Initiative (IMI) project ‘Collaboration on the optimisation of macromolecular pharmaceutical access to cellular targets (COMPACT)’

**List of Publications:** <https://scholar.google.com/citations?user=-5wWbVAAAAAJ&hl=en>

<https://www.mendeley.com/profiles/ernst-wagner/>

**Selected Recent Papers** (out of 448)

* Luo J, Höhn M, Reinhard S, Loy DM, Klein PM, Wagner E. (2019) IL4-receptor-targeted dual antitumoral apoptotic peptide - siRNA conjugate lipoplexes. *Adv. Funct. Materials*, online.
* Klein PM, Kern S, Lee DJ, Schmaus J, Höhn M, Gorges J, Kazmaier U, Wagner E. (2018) Folate receptor-directed orthogonal click-functionalization of siRNA lipopolyplexes for tumor cell killing in vivo. *Biomaterials* 178, 630-642.
* Reinhard S, Wang Y, Dengler S, Wagner E. (2018) Precise enzymatic cleavage sites for improved bioactivity of siRNA lipo-polyplexes. *Bioconjug. Chem.* 29, 3649-3657.
* Krhac Levacic A, Morys S, Kempter S, Lächelt U, Wagner E. (2017) Minicircle versus plasmid DNA delivery by receptor-targeted polyplexes. *Human Gene Therapy* 28, 862-874.
* Lee DJ, Kessel E, Lehto T, Liu X, Yoshinaga N, Padari K, Chen YC, Kempter S, Uchida S, Rädler JO, Pooga M, Sheu MT, Kataoka K, Wagner E. (2017) Systemic delivery of folate-PEG siRNA lipopolyplexes with enhanced intracellular stability for gene silencing in leukemia. *Bioconjugate Chem.* 28, 2393-2409.
* Moghimi SM, Wagner E. (2017) Nanoparticle Technology: Having Impact, but Needing Further Optimization. *Molecular Therapy* 25, 1461-1463.
* Wang S, Reinhard S, Li C, Qian M, Jiang H, Du Y, Lächelt U, Lu W, Wagner E, Huang R. (2017). Antitumoral Cascade-Targeting Ligand for IL-6 Receptor-Mediated Gene Delivery to Glioma. Molecular Therapy 25, 1556-1566.
* Röder R, Helma J, Preiß T, Rädle, JO, Leonhardt H, Wagner E. (2017) Intracellular Delivery of Nanobodies for Imaging of Target Proteins in Live Cells. *Pharm. Res.* 34, 161–174.
* Klein PM, Reinhard S, Lee DJ, Müller K, Ponader D, Hartmann L, Wagner E. (2016) Precise redox-sensitive cleavage sites for improved bioactivity of siRNA lipo-polyplexes. *Nanoscale* 8, 18098–18104.
* Lee DJ, Kessel E, Edinger D, He D, Klein PM, Voith von Voithenberg L, Lamb DC, Lächelt U, Lehto T, Wagner E. (2016) Dual antitumoral potency of EG5 siRNA nanoplexes armed with cytotoxic bifunctional glutamyl-methotrexate targeting ligand. *Biomaterials* 77, 98-110.
* Zhang P, He D, Klein P, Liu X, Röder R, Döblinger M, Wagner E. (2015) Enhanced intracellular protein transduction by sequence defined tetra oleoyl-oligoaminoamides targeted for cancer therapy. *Adv. Funct. Materials* 25, 6627–6636.
* Lächelt U, Wagner E. (2015) Nucleic Acid Therapeutics Using Polyplexes – A Journey of 50 Years (and Beyond). *Chem. Rev.* 115, 11043−11078 (2015).