

Positions and Employment

1970-1971	University Assistant, Institute of Biochemistry, University of Vienna, School of Medicine, Austria
1975-1977	Research Associate, Department of Biochemistry, University of California, Berkeley, CA, USA
1977	Visiting Scientist, Institute Ramón y Cajal, CSIC, Madrid, Spain
1977-1986	Assistant Professor of Biochemistry, Head of Research Group Cell Biology, University of Vienna, School of Medicine, Austria
1986	Visiting Scientist, Institute Pasteur, Paris, France
1986-1991	Associate Professor, Institute of Biochemistry, University of Vienna, School of Medicine
1990-1991	Fogarty Fellow, Howard Hughes Medical Institute, Department of Molecular Genetics and Cell Biology, University of Chicago, Illinois, USA
1991-2012	Professor of Molecular Cell Biology, Institute of Biochemistry and Molecular Cell Biology, Science Faculty, University of Vienna, Austria
1995-2005	Head, Institute of Biochemistry & Molecular Cell Biology, Science Faculty, University of Vienna, Austria
2005-2008	Head, Department of Molecular Cell Biology, Max F. Perutz Laboratories, University of Vienna, Austria
10/2012-	Professor Emeritus, Max F. Perutz Laboratories, University of Vienna, Austria

Other Experiences, Professional Memberships, and Awards

1970	Young Scientist Award to join the 20th Lindau Nobel Laureates Meeting
1971	Roche Institute for Molecular Biology Postdoctoral Fellowship Award
1974	Max Kade Foundation Postdoctoral Fellowship Award
1977	EMBO Short-Term Fellowship Award
1979	Theodor Körner Prize, Biochemistry
1980-	Ad hoc reviewer for the leading scientific journals and international grant organizations
1980-	Invited speaker at numerous international congresses, conferences, workshops
1981	"Venia legendi" for Biochemistry & Cell Biology, University Vienna, School of Medicine, Austria
1982-2000	Chairman, Cell Biology Branch of Austrian Biochemical Society
1982-2000	Austrian delegate to European Cell Biology Organization (ECBO)
1983	Austrian Sandoz Prize for Biology
1984	Hoechst Prize
1986	Austrian Academy of Sciences Fellowship
1986-1992	Editor, Protoplasma - An International Journal of Biology
1987-1994	Editorial Board, European Journal of Cell Biology
1987-2018	Organizer/co-organizer of international meetings, conferences and workshops
1990-1991	Fogarty Research Fellowship Award
1992-1996	Speaker, Vienna Biocenter, University of Vienna, Austria
1994-2000	Editorial Board, Cell Motility and the Cytoskeleton
1995-2006	Speaker, FWF Spezialforschungsbereich (SFB) Molecular Mechanisms of Cell Differentiation and Cell Growth
2002-	Erasmus program coordinator (Molecular/Cell Biology & Biochemistry)
2005-2012	Dean, BSc and PhD study program Molecular Biology
2008-	Editorial Board, International Journal of Cell Biology
2012-	Editor, PLoS ONE

Personal Statement

During my postdoctoral time I developed a strong interest in the then still young field of cytoskeleton

research to which I have been committed ever since. My initial interest was in microtubules (MTs) and their role in cell division and neurogenesis. After returning to Europe and establishing my own laboratory at the University of Vienna, I continued to work on high molecular weight MT-associated proteins (MAPs). In the course of our work on proteins regulating cellular MT dynamics, we identified a previously unknown protein of large size (>500 kDa) and named it plectin. The most remarkable findings were that plectin interacted with all three cytoskeletal filament systems, MTs, actin, and intermediate filaments (IFs), and showed widespread occurrence and prominent association with filament docking sites in mechanical stress-exposed tissues. On these grounds, my main interest shifted from MAPs to plectin and my laboratory engaged in an ambitious research program to characterize plectin biochemically, structurally and functionally, and establish how this versatile cytolinker protein dictates cell behavior. First, we performed structure-function analyses of the native, purified protein, and were able to demonstrate its domain structure, dimerization and oligomer formation among others by ultrastructural visualization. Later we were the first to clone and sequence full-length plectin from three organisms (human, rat, mouse), opening the door for molecular domain analyses and mutagenesis; we also mapped the genes. After additional cloning of the plectin gene, we determined its exon-intron organization and highly complex isoform expression; and we contributed to demonstrating plectin's involvement in multiple human diseases (plectinopathies) and revealing the underlying pathomechanisms, including studies on metastasizing cancers. Eventually, we could establish a key role of plectin in maintaining the functional integrity of IFs and cytoskeleton architecture. Further, we elucidated plectin's role in signaling and mechanotransduction through forming compartmentalized and interconnected signaling platforms in partnership with IFs. The generation of a unique and diversified panel of genetically modified mouse lines allowed us to dissect plectin's functional diversity and to use the animals as models for human diseases. Cell lines of various types derived from these mice enabled us to identify and live monitor plectin-dependent dynamic processes, and served us in therapeutic drug screening. In sum, after having devoted some 40 years of research to study plectin, I have not lost interest in this fascinating protein and as a result I am currently involved in several collaborations with senior and junior groups working on plectin to whom I transfer knowledge and resources.

Aside from plectin and MAPs, my laboratory was also interested in epiplakin, another giant (>700 kDa) cytoskeletal protein, that shares certain structural features with plectin, but is tissue (epithelia) specific. The epiplakin project and several other projects eventually became research foci of a number of former postdoctoral fellows upon establishing their own independent research groups.

Over the years, I have been training and mentoring near 100 predoctoral students (Diploma/Master and PhD) and >20 postdoctoral fellows. Of these, several have gone on to establish their own independent research groups, after taking faculty positions in house, or abroad, or doing research in an industry or academic setting.

Contributions to Science

As of 2020, 174 publications (<https://pubmed.ncbi.nlm.nih.gov/?term=Wiche+G%5BAuthor%5D&sort=pubdate>)

plus 15 book chapters, invited reviews, and research articles (not listed in PubMed):

Tuppy, H., and **Wiche**, G. (1971). δ -Aminolevulinic Acid Synthetase in Baker's Yeast. *Monatshette für Chemie* 102, 1305-1310.

Wiche, G. (1979). Comparative Studies of Tubulin in Extracts of Normal and Transformed Cells. *In: Protides of the Biological Fluids*, vol 26, 523-526. Pergamon Press

Wiche, G., Baker, M.A., Kindas-Mügge, I., Leichtfried, F., and Pytela, R. (1980). High Molecular Weight Polypeptides (around 300,000) from Cultured Cells and their Possible Role as Mediators of Microtubule-Intermediate Filament Interaction. *In: Microtubules and Microtubule Inhibitors*, eds. De Brabander, M., and De Mey, J. 189-200. Elsevier/ North Holland

- Wiche**, G. (1985). High molecular weight microtubule associated proteins (MAPs): a ubiquitous family of cytoskeletal connecting links. *Trends in Biochemical Sciences* 10, 67-70
- Koszka, C., Foisner, R., Seyfert, H.M., and **Wiche**, G. (1987). Isolation of Ca²⁺-Protease Resistant High Mr Microtubule Binding Protein from Mammalian Brain: Characterization of Properties Partially Expected for a Dynein-like Molecule. *Protoplasma* 138, 54-61
- Wiche**, G., Foisner, R., Herrmann, H., Hirt, H., and Weitzer, G. (1987). Plectin and High-Mr MAPs: Versatile Connecting Links of the Cytoskeleton. *In: The Cytoskeleton in Cell Differentiation and Development*, eds. Maccioni, R., and Arechaga, J. ICSU Symp. Series vol. 8, 107-117. IRL Press, Oxford
- Foisner, R., Feldman, B., and **Wiche**, G. (1988). Partial Proteolysis of Plectin and Localization of Self-interaction and Vimentin Binding Sites on Separate Molecular Domains. *Protoplasma* 145, 120-128
- Foisner, R., Feldman, B., and **Wiche**, G. (1989). Plectin-Vimentin Interaction: Molecular Binding Domains and Regulation by Phosphorylation. *In: Cytoskeletal and Extracellular Proteins: Structure, Interaction, Assembly*, eds. Aebi, U., and Engel, J. Springer Series in Biophysics, vol. 3, 166-168. Springer Verlag, Heidelberg/New York
- Wiche**, G. (1993). Plectin. *In: Guidebook to the Cytoskeletal and Motor Proteins*, eds. Kreis, T.E., and Vale, R.D. Oxford University Press/Sambrook and Tooze Publishers, Oxford, 166-167
- Wiche**, G. (1993). Syncoilin. *In: Guidebook to the Cytoskeletal and Motor Proteins*, eds. Kreis, T.E., and Vale, R.D. Oxford University Press/Sambrook and Tooze Publishers, Oxford, 124-125
- Wiche**, G. (1999). Plectin. *In: Guidebook to the Cytoskeletal and Motor Proteins*, eds. Kreis, T.E., and Vale, R.D. Oxford University Press/Sambrook and Tooze Publishers, Oxford, 341-344
- Propst, F., and **Wiche**, G. (1999). Syncoilin. *In: Guidebook to the Cytoskeletal and Motor Proteins*, eds. Kreis, T.E., and Vale, R.D. Oxford University Press/Sambrook and Tooze Publishers, Oxford, 229-230
- Fuchs, P., and **Wiche**, G. (2004). Intermediate filament linker proteins: Plectin and BPAG1. *In: Encyclopedia of Biological Chemistry*, 1st edition, 2, 452-457
- Fuchs, P. and **Wiche**, G. (2013). Intermediate filament linker proteins: Plectin and BPAG1. *In: Encyclopedia of Biological Chemistry*, 2nd edition, X, 624-630. (<http://dx.doi.org/10.1016/B978-0-12-378630-2.00428-X>)
- Winter, L., Schröder, R., and **Wiche**, G. (2013). Plectinopathies. *In: Muscle disease: pathology and genetics*. Edited by H.H. Goebel, C.A. Sewry, R.O. Weller. Wiley-Blackwell. pp 309-320