

Personal: Austrian citizen; born 6/2/1979

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Education and academic diploma

2014 **Habilitation**, Chemistry and life sciences department, Univ. Grenoble (FR)
2007 **Ph.D. in Physics**, Université Joseph Fourier Grenoble (FR)
2004 **M. Sc. in Chemistry**, with distinction, University of Vienna/AT

Academic Positions

2021 – **Full Professor**, Institute of Science and Technology Austria
2017 – 2020 **Head of the NMR group**, Institut de Biologie Structurale (IBS), Grenoble/FR
2011 – 2021 **Research team leader**, IBS Grenoble
2/2008-11/2010 **Post-doc**, Dept. of Chemistry and Applied Biosciences, **ETH Zürich**, Switzerland.
2005 (3 months) Visiting scientist in the group of Lucio Frydman, **Weizmann Institute**, Israel
2004-2007 **PhD student**, Univ. Joseph Fourier Grenoble (IBS)
2017 I was offered a position as full professor at Univ. Bayreuth/DE (declined)

Organization of conferences

2019 Alpine Conference on Magnetic Resonance in Solids (www.alpine-conference.org)
2016, 2018 & 2020: “Les Houches – TSRC Workshop on Protein Dynamics”
An international multi-disciplinary conference on protein dynamics in the
Chamonix valley/FR. (www.tinyurl.com/protdyn2020)
2014 Biomolecular NMR Symposium Grenoble/FR. (www.tinyurl.com/bnmrs2014)

Awards and fellowships

2012 **ERC StG ProtDyn2Function**, 1.5 M€
2010 **Young Investigator Award, French Biophysical Society** (www.tinyurl.com/sfbprize)
2008 **Post-doc fellowship ‘ETH Fellows’**, ETH Zurich (2008)
2007 **Award** for promotion of outstanding young researchers, Upper-Austrian regional
government.
2004 **Boehringer Ingelheim fellowship**: competitive and prestigious PhD fellowship
(declined to favour another funding offer)
2004 **Post-Graduate Grant** from the Austrian ministry of Science and Education

Nominated by CNRS for the ‘Prix de la Fondation Bettencourt’ (250 k€). Nominated for the ‘Founder’s Medal’ at ICMRBS (International Conference on Magnetic Resonance in Biological Systems) and the Varian Young Investigator Award 2020. (Decisions pending.)

Invited oral presentations (selected; since 2014 only)

Experimental NMR Conference ENC (largest NMR conference), Asilomar/USA, 2015, and Baltimore/USA, 2020 (invitation declined). **EUROMAR** (largest European NMR conference), invited 3 times: 2014 (Zürich/CH), 2016 (Aarhus/DK), 2018 (Nantes/FR). **Internat. Conference on Magnetic Resonance in Biological Systems (ICMRBS)** Boston, 2020. **Keystone Symposium ‘Frontiers of NMR in Life Sciences’**, 2017, Keystone/USA. **Chianti Workshop ‘Magnetic Resonance for Cellular Structural Biology’**, 2016, Grossetto/IT. **Pasteur Conference “NMR – a tool for biology”**, Paris, 2017. **RRR workshop on protein NMR**, Kyoto/Japan, 2014. **4th NMR Meets Biology Workshop**, Khajuraho/India, 2018. **EMBO course on Integrative Structural Biology**, Pasteur, Paris, July 2019, and 2017 edition thereof. **Magnetic Moments in Central Europe**, Prague, Mar 2019.

National meetings: Danish NMR meeting, 2014 (Carlsberg; Copenhagen) and 2019 (Korsør). Annual discussion meeting of the **German Chemical Society (FGMR)**, 2016, Düsseldorf. **Central European Bruker User Meeting**, 2018, Vienna/AT. **French NMR meeting GERM**, 2015. **French Bruker User**

Meeting, 2018, Paris. **French Crystallography Association** (AFC) meeting, 2015, Marseille/FR. **Tri-national Rhine-knee Meeting on Structural Biology** (Swiss/German/French), 2017, Munster/FR.

Invitations to institute-wide seminars at universities, including ETH Zürich/CH (2016). EPFL, Lausanne/CH (2017). Univ. Freiburg/DE (2018). TU Munich (2019), Univ. Innsbruck/AT (2019)...

Supervision of students and post-docs

6 Post-Docs: Peixiang Ma 2011-14 (now research staff at ShanghaiTech); Astrid Sivertsen 2011-13; Diego Gauto 2015-18; Jia-Ying Guan, 2014-16; Carsten Krichel, 2016-17 (now in project manager in industry); Hugo Fraga, 2017-18 (now junior group leader at Univ. Porto). All at IBS Grenoble.

4 PhD students: Vilius Kurauskas (2013-17; now post-doc UC Madison); Katharina Weinhäupl (2014-2018; awarded prestigious 8 k€ prize for her PhD from French Fondation Rothschild:

tinyurl.com/prixchoucroun; now post-doc Univ. Porto); Iva Sucec (since Sept. 2018). All at IBS Grenoble.

10 master students and visiting students at ETH Zürich and IBS Grenoble.

Teaching

Teaching Physical Chemistry at ETH Zürich (weekly courses, 3 years). Courses on Emerging techniques in structural biology at Univ. Grenoble. NMR courses in 8 structural biology/NMR schools/workshops.

Activities as editor and reviewer

Associate Editor of *Magnetic Resonance*. Guest editor for special issue in *ChemPhysChem*. Reviewing for funding bodies, e.g., French ANR, Austrian FWF, Israeli ISF, Swiss SNF. Reviewer for >20 research journals, more than 90 reviews. See also www.tinyurl.com/publons-schanda.

Established collaborations (not exhaustive)

Mitochondrial import: Nils Wiedemann (Freiburg), Doron Rapaport (Tübingen) **Mitochondrial MPs**: Edmund Kunji (Cambridge) **MD simulations**: Chris Chipot (Nancy), Kresten Lindorff-Larsen (Copenhagen), Nikolai Skrynnikov (Purdue) **EPR spectroscopy**: Enrica Bordignon (Bochum). **Single-molecule FRET**: Ben Schuler (Zürich). **Advanced isotope-labeling**: Roman Lichtenecker, Masatsune Kainoshi. **Cryo-EM**: Guy Schoehn (Grenoble), Leonid Sazanov (IST Austria).

All have agreed to collaborate and I have published with almost all these persons. On the complementary techniques relevant for *Dynam/IMP* (in vivo/import experiments with yeast, MD simulations, Cryo-EM) I have two different current collaboration partners. This fact, arising from previous research projects, makes my collaboration network more robust, providing alternative viewpoints and contingency plans.

Principal contributions to science

How are the dynamic ensembles of protein structures linked to biological function? With a **strong initial background in NMR methods** development, I have integrated over the last decade **multiple biophysical techniques and biochemistry** to uncover the link between functional mechanisms of biomolecules and the underlying structural dynamics.

I **developed** several **innovative NMR methodologies** for studying protein dynamics and structure, and the advanced methods development has been a crucial asset to deciphering biophysical processes. The SOFAST/BEST NMR methods (*JACS* 2005 and 2007, *PNAS* 2007 and others), now state-of-the-art in solution-NMR, have greatly **boosted speed and sensitivity**, enabling the study of kinetic processes in real time, e.g., **protein folding** (e.g. *JACS* 2012, *JBC* 2010, *JMB* 2008), and *in-cell* NMR. Other methods allow e.g. the **detection of micro-/millisecond protein motions** in solid-state NMR (e.g. *JACS* 2012, *Angew. Chem.* 2014) enabling us e.g. to observe directly the rocking motion of proteins in crystals (*Nat. Commun.* 2015 & 2017), or bring to light hydrogen bonding (*Angew. Chem.* 2009).

By **developing an integrated NMR / cryo-EM approach** we determined the structure of a 12x39 kDa **large enzyme complex**, setting a **new record** for NMR-based structure determination in terms of protein size (*Nat. Comm.* 2019). The approach opens avenues for integrated structure determination, particularly relevant for DynamIMP (WP 1&2).

I contributed to the **membrane protein** field by providing a detailed analysis of the impact that membrane mimetics have on membrane proteins (*Chem. Rev.* 2018, *JPLC* 2018, *Nat. Struct. Mol. Biol.* 2018, *Chem. Rev.* 2018) and showing for the first time NMR studies of a **membrane protein in native nanodiscs** (*Angew. Chem.* 2017); this experience will be valuable particularly for WP2.

I lead a multi-disciplinary work to determine the structure and dynamics of key chaperone complexes mitochondrial **membrane protein import** (*Cell* 2018, Weinhäupl *et al*, *submitted.*).

Over the last ~ 8 years I have made a strong investment into moving to advanced sample production and biochemistry, and the majority of the samples we studied were produced by my group, independently from collaborators, including advanced isotope-labelling, cell-free and *E. coli* production.