

SCIENTIFIC CURRICULUM
MICHAEL ASSFALG
University of Verona

Current Position

October 2014 – today: Associate Professor of Organic Chemistry

Education and experience

Michael Assfalg graduated in chemistry (110 cum laude) and received his PhD in chemistry from the University of Florence. He spent a postdoctoral research period in the Department of Chemistry and Biochemistry of the University of Maryland gaining experience in biomolecular NMR (2002-2004) and in the Biomolecular Magnetic Resonance Center at the University of Frankfurt (2004-2005). In 2006 he was appointed Assistant Professor and since 2014 he is Associate Professor of Organic Chemistry at the Department of Biotechnology of the University of Verona.

He is an expert in NMR spectroscopy applied to the study of organic molecules, mixtures of compounds and biomacromolecules. He led the infrastructure of the NMR spectrometer of the University of Verona in the period 2012-2016. His research activity was focused on molecular recognition in protein-ligand interactions, protein-protein and protein-nanoparticle systems, and on the structural determination of biomolecules.

He received funding from the Ministry of University and Research (PRIN 2012 as participant, PRIN 2009 coordinator of local unit, FIRB 2008 national coordinator), Fondazione Cariverona (2012 participant, 2007 principal investigator) and University of Verona (Joint Projects 2007, 2017 project leader).

He is the author of ca. 70 research articles published in peer-reviewed scientific journals, 4 reviews, three book chapters.

Organization of Conferences

Member of the scientific committee of the following international conferences: 7th ECBS / LS-EuChemS meeting - Milan 2021

Member of the scientific committee of the following national congresses: National Conference of the Division of Chemistry of Biological Systems, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019

Member of the Organizing Committee of the following international conferences: X ICBIC - Florence, Italy (2001); XIX International Conference on Magnetic Resonance in Biological Systems, Convention Center - Florence, Italy (2000)

President of the Organizing Committee of the following national congresses: National Conference of the Division of Chemistry of Biological Systems, 2016, Verona

Editorial activity

Since 2019 - Member of the Editorial Board of the journal Molecules - Bioorganic Chemistry section.

Since 2020 - Review Editor for the journal Frontiers in Chemistry - Supramolecular Chemistry section.

Activity in Scientific Societies

Member of the Steering Committee of the Division of Chemistry of Biological Systems of the Italian Chemical Society (2012-present). Vice President of the Division since 2018.

Teaching

Organic Chemistry:

Organic Chemistry and Biological Macromolecules (BSc Degree in Bioinformatics), Elements of Organic Chemistry (BSc Degree in Bioinformatics), Drug Discovery (MSc Degree in Molecular and Industrial Biotechnology), Metabolomics and Drug discovery (MSc Degree in Molecular and Industrial Biotechnologies), Organic Chemistry (BSc Degree in Agro-Industrial Biotechnology), Organic Chemistry (BSc Degree in Biotechnology), Supramolecular Chemistry of Biological Chemistry (MSc in Molecular and Medical Biotechnology).

Analytical Chemistry:

Molecular Analytical Methods - Metabolomics (Master's Degree in Agro-food Biotechnology)

Doctorate Courses

Since 2006 member of the Academic Board of the Doctoral Course in Biotechnology

Since 2006 advisor of 5 students of the Doctoral Course in Biotechnology (of which: 1 enrolled in the first year, 1 awaiting final exam, 1 postdoc NIH Bethesda, 1 postdoc Max Planck Göttingen, 1 works in Spain)

Institutional activity

2014 - 2015 President of the College of Biotechnology (L2)

2015 - 2018 Reference person of the Degree Course CdLM - Molecular and medical biotechnology (LM9)

2018 - today President of the College of Biotechnology (L2, LM7, LM8, LM9)

Invited oral communications

Conference: "IV International Caparica Symposium on Nanoparticles / Nanomaterials and Applications". Caparica, 20-23 January 2020

Conference: "11th ISNSC International Symposium on Nano & Supramolecular Chemistry". Qingsyang, China, 12-16 October 2019

Conference: "Europe meets Italy with Paramagnetic NMR". Venice, 28 September 2016.

Conference: "4th Annual Bio-NMR User Meeting". Warsaw, Poland, 5-8 May 2014.

Conference: "Joint Conference of the German, Italian and Slovenian Magnetic Resonance Societies. Advanced Magnetic Resonance ". Frauenchiemsee, Germany, 9-12 September 2013.

Conference: "8th International Conference on Lipid Binding Proteins". La Plata, Argentina, 3-6 November 2013.

Conference: "12th Chianti / INSTRUCT Workshop on BioNMR". Montecatini Terme, 17-22 June 2012.

Conference: bilateral Israel-Italy meeting on "Molecular Structure, Dynamics and Recognition of Biomolecules". Tel Aviv, Israel, 5-6 June 2012.

Selected publications

Munari F, Barracchia CG, Franchin C, Parolini F, Capaldi S, Romeo A, Bubacco L, Assfalg M, Arrigoni G, D'Onofrio M. Semisynthetic and Enzyme-Mediated Conjugate Preparations Illuminate the Ubiquitination-Dependent Aggregation of Tau Protein. *Angew Chem Int Ed Engl.* 2020 [Epub ahead of print]

Rezaei-Ghaleh N, Munari F, Becker S, Assfalg M, Griesinger C. A facile oxygen-17 NMR method to determine effective viscosity in dilute, molecularly crowded and confined aqueous media. *Chem Commun.* 2019 Oct 10;55(82):12404-12407.

Bortot A, Zanzoni S, D'Onofrio M, Assfalg M. Specific Interaction Sites Determine Differential Adsorption of Protein Structural Isomers on Nanoparticle Surfaces. *Chem Eur J.* 2018 Apr 17;24(22):5911-5919.

Ceccon A, Busato M, Pérez Santero S, D'Onofrio M, Musiani F, Giorgetti A, Assfalg M. Transient Interactions of a Cytosolic Protein with Macromolecular and Vesicular Cosolutes: Unspecific and Specific Effects. *Chembiochem.* 2015 Dec;16(18):2633-45.

Zanzoni S, Pedroni M, D'Onofrio M, Speghini A, Assfalg M. Paramagnetic Nanoparticles Leave Their Mark on Nuclear Spins of Transiently Adsorbed Proteins. *J Am Chem Soc.* 2016 Jan 13;138(1):72-5.

Ceccon A, Lelli M, D'Onofrio M, Molinari H, Assfalg M. Dynamics of a globular protein adsorbed to liposomal nanoparticles. *J Am Chem Soc.* 2014 Sep 24;136(38):13158-61.

Lentini R, Santero SP, Chizzolini F, Cecchi D, Fontana J, Marchioretto M, Del Bianco C, Terrell JL, Spencer AC, Martini L, Forlin M, Assfalg M, Dalla Serra M, Bentley WE, Mansy SS. Integrating artificial with natural cells to translate chemical messages that direct *E. coli* behaviour. *Nat Commun.* 2014 May 30;5:4012.

D'Onofrio M, Gianolio E, Ceccon A, Arena F, Zanzoni S, Fushman D, Aime S, Molinari H, Assfalg M. High relaxivity supramolecular adducts between human-liver fatty-acid-binding protein and amphiphilic Gd(III) complexes: structural basis for the design of intracellular targeting MRI probes. *Chem Eur J.* 2012 Aug 6;18(32):9919-28.

Assfalg M, Gianolio E, Zanzoni S, Tomaselli S, Russo VL, Cabella C, Ragona L, Aime S, Molinari H. NMR structural studies of the supramolecular adducts between a liver cytosolic bile acid binding protein and gadolinium(III)-chelates bearing bile acids residues: molecular determinants of the binding of a hepatospecific magnetic resonance imaging contrast agent. *J Med Chem.* 2007 Nov 1;50(22):5257-68.

Assfalg M, Bertini I, Colangiuli D, Luchinat C, Schäfer H, Schütz B, Spraul M. Evidence of different metabolic phenotypes in humans. *Proc Natl Acad Sci U S A.* 2008 Feb 5;105(5):1420-4.

Varadan R, Assfalg M, Raasi S, Pickart C, Fushman D. Structural determinants for selective recognition of a Lys48-linked polyubiquitin chain by a UBA domain. *Mol Cell.* 2005 Jun 10;18(6):687-98.

Assfalg M, Bertini I, Dolfi A, Turano P, Mauk AG, Rosell FI, Gray HB. Structural model for an alkaline form of ferricytochrome C. *J Am Chem Soc.* 2003 Mar 12;125(10):2913-22.

Assfalg M, Bertini I, Bruschi M, Michel C, Turano P. The metal reductase activity of some multiheme cytochromes c: NMR structural characterization of the reduction of chromium(VI) to chromium(III) by cytochrome c(7). *Proc Natl Acad Sci U S A.* 2002 Jul 23;99(15):9750-4.