



Born in 23/06/1991, Açores, Portugal

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🗣 Portuguese (Native), English (Proficient), Spanish (Basic)

Education

2015 M.Sc. Biochemistry, Faculdade de Ciências e Tecnologias, Universidade Nova de Lisboa

2013 B.Sc. Biochemistry, Faculdade de Ciências e Tecnologias, Universidade Nova de Lisboa

Research experience

2015-Current

Promovendus | NMR Spectroscopy Research Group

Supervision Dr. Markus Weingarth

Bijvoet Center for Molecular Research/ UU (Netherlands)

Solid-State NMR; DNP
Protein-Lipid interactions
Antibiotic Research

2014-2015

Researcher | Biotechnology and Biomolecular Sciences

Supervision Dr. Carla Cruz, Dr. Eurico Cabrita

CICS-FCS/UBI (Portugal)

Organic Synthesis
DNA-Ligand interactions
Drug Discovery

2013-2015

Internship | Bio-Molecular Structure and Interactions

Supervision Dr. Eurico Cabrita

FCT/UNL (Portugal)

Solution-Sate NMR
Protein-Sugar interactions
Protein Biochemistry

2013

Internship | BIOSCOPE Group

Supervision Dr. Carlos Lodeiro Espiño, FCT/UNL (Portugal)

Metal-Ligand interactions
Fluorometry

Internship | Analytical Laboratory LA/REQUIMTE

Supervision Dr. Luz Fernandes, FCT/UNL (Portugal)

MALDI-TOFF

Honors and awards

2014 *G-quadruplex binders for cancer therapy*, research fellowship, CICS-FCS/UBI, Portugal

FCT-UNL young student entrepreneur of the year, competition, 2nd place, FCT-UNL, Portugal

Innovation Prize Award, best pitch, 1st place, ENEBIOQ VII, Portugal

Publications

2019

- (10) **Medeiros-Silva, J.**, Jekhmane, S., Breukink, E., Weingarh, M.; Towards the native binding modes of Lipid II targeting antibiotics. (2019) *ChemBioChem*, accepted (Special Issue 'ChemBioTalents')
- (9) Jekhmane, S.*, **Medeiros-Silva, J.***, Li, J., Kümmerer, F., Müller-Hermes, C., Baldus, M., Roux, B., Weingarh, M.; Shifts in the selectivity filter dynamics cause modal gating in K⁺ channels. (2019) *Nature Communications.*, 10, 12. (*shared first-author)

2018

- (8) **Medeiros-Silva, J.**; Jekhmane, S.; Lucini Paioni, A.; Gawarecka, K.; Baldus, M.; Swiezewska, E.; Breukink, E.; Weingarh, M.; High-resolution NMR studies of antibiotics in cell membranes. (2018) *Nature Communications*, 9, 3963. (Highlighted in the press)
- (7) Tikhonova, E.; Hariharan, P.; **Medeiros-Silva, J.**; Bogdanov, M.V.; Dowhan, W.; Weingarh, M.; Guan, L.; Structural and functional characterization of protein-lipid interactions of the Salmonella typhimurium melibiose transporter MelB 33. (2018) *BMC Biology*, 16, 85.
- (6) Saracino, A.; Fontana, F.; Jekhmane, S.; **Medeiros-Silva, J.**; Weingarh, M.; Gelain, F. Elucidating self-assembling peptide aggregation via Morphoscanner: a new tool for protein-peptide structural characterization. (2018) *Advanced Science*, 5, 1800471.

2017

- (5) Visscher, K.M.; **Medeiros-Silva, J.**; Mance, D.; Rodrigues, J.P.G.L.M.; Daniëls, M.; Bonvin, A.M.J.J.; Baldus, M.; Weingarh, M.; Supramolecular organization and functional implications of K⁺ channel clusters in membranes. (2017) *Angew. Chem.*, 56, 13222. (Selected as Frontispiece)
- (4) **Medeiros-Silva, J.**; Jekhmane, S.; Baldus, M.; Weingarh, M.; Hydrogen bond strength in membrane proteins probed by time-resolved ¹H-detected solid-state NMR and MD simulations. (2017) *Solid State Nucl. Magn. Reson.*, 87, 80. (Invited Article 'Ultra-fast MAS')

2016

- (3) **Medeiros-Silva, J.**; Mance, D.; Daniels, M.; Jekhmane, S.; Houben, K.; Baldus, M.; Weingarh, M.; ¹H-detected solid-state NMR studies of water-inaccessible proteins in vitro and in situ. (2016) *Angew. Chem.*, 55, 13606.
- (2) **Medeiros-Silva, J.**; Guédin, A.; Salgado, G.F.; Mergny, J.L.; Queiroz, J.Q.; Cabrita, E.J.; Cruz, C.; Phenanthroline-bis-oxazole ligands for binding and stabilization of G-quadruplexes. (2016) *Biochim. Biophys. Acta* 1861(5). (Special Issue 'G-Quadruplex')

2015

- (1) Santos, D.; **Medeiros-Silva, J.**; Cegonho, S.; Alves, E.; Ramilo-Gomes, F.; Santos, A. O.; Silvestre, S.; Cruz, C.; Cell proliferation effects of calix[4]arene derivatives. (2015) *Tetrahedron*, 71, 7593–7599.

Communications

Talk/Pitch 12 | Seminar 1 | Poster 12

2018

Talk *High-resolution NMR of antibiotic complexes in native bacterial membranes.*, VII Ibero-American NMR Meeting – 6th Iberian NMR Meeting – 9th GERMN Meeting – 4th Portuguese NMR Meeting, Lisbon, Portugal, 2018.

Seminar *High-resolution NMR of antibiotic complexes in native bacterial membranes.*, Institute for Molecular Medicine (IMM), Lisbon, Portugal, 2018.

- Pitch *Zooming in the pharmacological relevant state: Truly native structural studies of antibiotics-receptor interactions in bacterial cell membranes.*, Netherlands Centre for One Health meeting, Rotterdam, Netherlands, 2018.
- Poster *Insight to the Nisin-Lipid II pore in native membranes with atomic resolution – a solid-state NMR study.*, Annual Bijvoet Symposium, Utrecht, Netherlands, 2018.
- Pitch **Insight to the Nisin-Lipid II pore in native membranes with atomic resolution – a solid-state NMR study.**, 16thEPI - 4thGEQB, Barcelona, Spain, 2018.
- 2017**
- Poster *Cellular high-resolution studies of Nisin-Lipid II complexes.*, Utrecht Chemistry Day, Utrecht, Netherlands, 2017.
- Talk *A ssNMR study of the Nisin-Lipid II pore in native membranes and at high resolution.*, CHAINS, Veldhoven, Netherlands, 2017.
- Poster *Cellular high-resolution studies of Nisin-Lipid II complexes.*, Science for Life conference, Utrecht, Netherlands, 2017.
- Talk *A ssNMR study of the Nisin-LipidII pore in native membranes and at high resolution.*, International Meeting on Antibiotic Peptides, Copenhagen, Denmark, 2017.
- Poster *Cellular high-resolution studies of Nisin-Lipid II complexes.*, Annual Bijvoet Symposium, Utrecht, Netherlands, 2017.
- Poster *Cellular high-resolution studies of Nisin-Lipid II complexes.*, Dutch Peptide Symposium, Eindhoven, Netherlands, 2017.
- Talk *¹H-detection of water-inaccessible proteins in vitro and in situ*, AIO evenings, Utrecht, Netherlands, 2017.
- 2016**
- Talk *¹H-detection of water-inaccessible proteins in vitro and in situ*, NMRDG meeting, Wageningen, Netherlands, 2016.
- Poster *New approaches for ¹H-detection in complex Membrane Proteins*, Euromar, Aarhus, Netherlands, 2016.
- Pitch *Accessing membrane proteins in vivo with atomic resolution by ¹H-detected solid-state NMR*, Annual Bijvoet Symposium, Soesterberg, Netherlands, 2016.
- 2015**
- Poster *Phenanthroline dioxazole as potential G-quadruplex ligand for cancer therapy*, International Symposium on Synthesis and Catalysis, Évora, Portugal, 2015.
- Poster *Synthesis and biological evaluation of steroid and polyoxazole derivatives for G-quadruplex binding*, International Symposium on Synthesis and Catalysis, Évora, Portugal, 2015.
- Talk *Phenanthroline dioxazole as potential G-quadruplex ligand for cancer therapy*, International Symposium on Synthesis and Catalysis, Évora, Portugal, 2015.
- Poster *G-quadruplex production and stabilization*, presented by Dr. Carla Cruz, 5th International Meeting on Quadruplex Nucleic Acids, Bordeaux, France, 2015.
- Poster *Phenanthroline-based polyoxazoids as potent G-quadruplex ligands*, UBIQuímica Chemistry and Biochemistry Symposium, Covilhã, Portugal, 2015
- Talk *Phenanthroline polyoxazoles as G-Quadruplex ligands for cancer therapy.*, X Annual CICS-UBI Symposium, Covilhã, Portugal, 2015.
- Talk *G-4 binders for cancer therapy*, I Annual Master's Dissertations Symposium, Caparica, Portugal, 2015.
- 2014**
- Pitch *HPV Clear - A practical test for HPV screening*, 7th National Meeting of Biochemistry Students (ENEBIOQ VII), Caparica, Portugal, 2014

Poster *Molecular basis for β -1,3-1,4-mixed linked glucans recognition by the carbohydrate-binding module II from Clostridium thermocellum*, 7th National Meeting of Biochemistry Students (ENE BIOQ VII), Caparica, Portugal, 2014

2013

Poster *Surface-Enhanced Raman Scattering effect of colloidal silver nanoparticles on ibuprofen*, Biomolecular Spectroscopy module, Caparica, Portugal 2013

Teaching and assistance

Supervision

2018-19 Bram Vermeulen (Master level)

2018-19 Thorben Maaß (Master level)

2017-18 Felix Kümmerer (Master level)

2016-17 Christopher Müller Hermes (Master level)

Teaching and assistance

Assistant “NMR-spectroscopy en molecular modelling”, Bsc. level course, 50 hours/year, with Professors Marc Baldus and Alexandre Bonvin; Utrecht University, editions 2017, 18 and 19.

Assistant “Introduction to Biomolecular NMR: structure and interactions”, Workshop, 6 hours/year, with Dr. Eurico Cabrita; Nova University of Lisbon, editions 2014 and 2015.

Evaluator Evaluated 2 BSc. level courses "Biochemistry" and "Genetics and biotechnology", and 1 MSc. level course, "Biotechnology and food quality"; Advisory Council at the Agency for Assessment and Accreditation of Higher Education (A3ES), 2015

Assistant “Enzymology and kinetic enzymatics” Bsc. level course, 60 hours, with Dr. Maria Teresa Catarino; Nova University of Lisbon, 2014 edition

Other Activities

Events, workshops and courses attended

“**Non-Uniform Sampling in NMR**”, G-NMR workshop, 8 hours, München, Germany, 2017.

"**Theory of NMR**", summer school, lectures of Professors Shimon Vega, Konstantin Ivanov, P. K. Madhu, Kay Saalwächter and Drs. Jörg Matysik, Chen Song and Zdenek Tosner, total 40 hours, Leipzig, 2017.

“**pNMR: The roots of matter**”, workshop on paramagnetic NMR, 10 hours, Aarhus, Denmark, 2016.

“**NMR-focus: NMR and Modelling Methods for Protein Interactions and Drug Design**”, workshop, lectures of Prof. Alexandre Bonvin, Dr. Hugo van Ingen and Prof. Carlos Geraldes, total of 26 hours, Coimbra, 2013.

“**NMR in protein interactions studies**”, workshop, lectures of Drs. Eurico Cabrita, Aldino Viegas, Ângelo Figueiredo and Prof. Alexandre Bonvin, total of 26 hours, Lisbon, 2013.

MIT-E3 forum, Lisbon, 2012.

Events and workshops organized

JORTEC, organization committee, editions 2011, 2012, 2013 and 2014

EXPO-FCT/UNL, scientific experiments demonstrator, editions 2009, 2010, 2011, 2012, 2013 and 2014.

Part-time jobs

2007-14 Waiter, Restaurant Cantinho do Cais, São Miguel - Açores, Portugal

2012-14 Bartender, My Spot Bar, FCT/UNL, Portugal

2012-13 Bartender, Divina Gula Bar, Caparica, Portugal