

**PERSONAL INFORMATION**

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**Full name:** Maria Angelina de Sá Palma  
**Nationality:** Portuguese  
**Date and Place of Birth:** August 5<sup>th</sup>, 1975; Neumünster (Germany)  
**Institutional address:** UCIBIO-REQUIMTE Departamento de Química, FCT-NOVA  
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**CURRENT POSITIONS**

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2015-present Honorary Research Associate  
 Glycosciences Laboratory/Department of Medicine/Imperial College London/UK  
 2013-present Research Assistant Professor  
 Head of the GlycoLab- Functional Glycobiology Laboratory  
 UCIBIO, Department of Chemistry, FCT-NOVA, Portugal

**PREVIOUS POSITIONS**

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2009-2013 Post-doctoral Research Fellow  
 Department of Chemistry, FCT-NOVA, Portugal  
 2009-2013 Honorary Research Associate  
 Glycosciences Laboratory, Department of Medicine, Imperial College London, UK  
 2007-2009 Post-doctoral Research Fellow  
 Glycosciences Laboratory, Department of Medicine, Imperial College London, UK

**EDUCATION**

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2007 PhD in Biochemistry  
 Institute of Chemical and Biological Chemistry/NOVA, Portugal  
 2001 Degree in Biochemistry  
 Faculty of Science and Technology, University of Algarve, Portugal

**FELLOWSHIPS, AWARDS & HONORS**

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2014 Bluepharma/University of Coimbra Innovation Award  
 2013 Santander-Totta/NOVA Scientific Merit Award  
 2013 FCT Investigator (IF/00033/2012), Fundação para a Ciência e Tecnologia (FCT), Portugal.  
 2013 Scientific Merit Honor by the NOVA University of Lisbon  
 2008 Travel Fund Award from the Society of Glycobiology  
 2007 Post-doctoral fellowship (SFRH/BPD/26515/2006), FCT, Portugal.  
 2002 PhD fellowship (SFRH/BD/6506/2001), FCT, Portugal.

**SUPERVISION**

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2016-2017 Master student Luis Morganho, FCT-NOVA  
 2015-2016 Master student Raquel Costa, FCT-NOVA  
 2015-2019 PhD student Viviana Correia, FCT-NOVA (PD/BD/105727/2014)  
 2015-2019 PhD student Diana Ribeiro, FCT-NOVA (SFRH/BD/100569/2014)  
 2013-2014 Research Fellows Diana Ribeiro and Viviana Correia, FCT-NOVA  
 2011-2012 Undergraduate student Mariana Romão, FCT-NOVA  
 2010-2014 PhD student Lisete Silva, University of Aveiro (SFRH/BD/71455/2010)

**TEACHING**

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2015 & 2014 INSTRUCT courses ISBio2015 and 2014: Integrative Structural Biology tools for the study of protein-ligand interactions; GlycoArray module (8 hs/year)  
 2013-present Glycobiology and Glycochemistry e-learning course, FCM-NOVA (Teacher and scientific advisor)

2010-present	Biochemistry and Metabolism practical modules at the Biochemistry Section of the Department of Chemistry at FCT-NOVA (94 hs);
2010-present	Lecturer at the Cell Therapies and Regenerative Medicine Doctoral Program ITQB-NOVA (3 hs)
2010-present	Lecturer at the Master Program in Chemistry (2nd cycle) University of Lisbon (3 hs)

## RECENT GRANTS AND R&D PROJECTS

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### AS PRINCIPAL INVESTIGATOR:

2014	DQ/REQUIMTE-CQFB Competitive mini-project: Fighting Fungal Pathogens: Molecular recognition of $\beta$ -glucans by the immune receptor Dectin-1
2013-2014	EXPL/BBB-BQB/0750/2012, funded by FCT, Portugal: Pylori GlycoArrays: Development of microarrays from Helicobacter pylori cell surface glycome toward immunological and serological studies
2011-2014	PTCD/QUI/QUI/112537/2009, funded by FCT, Portugal: A carbohydrate microarray platform for discovery of ligands in polysaccharides recognised by microbial carbohydrate-binding modules

### AS TEAM MEMBER:

2016-2019	PTDC/BBB-BEP/0869/2014, funded by FCT, Portugal: An integrative structural biology approach to characterise the protein-carbohydrate microbial recognition
2013-2016	RECI/BBB-BEP/0124/2012, funded by FCT, Portugal: Modern Structural Biology: Resources for the advancement of in-house X-ray Crystallography
2013-2014	EXPL/BBB-BEP/0506/2012, funded by FCT, Portugal: Development of cohesin- microarrays for determining cohesin-dockerin specificities of novel cellulolytic species

## SELECTED INVITED LECTURES (5/8)

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2016-May	Unravelling glucan recognition systems by glycome microarrays and mass spectrometry. 5th Workshop of MS and Carbohydrates, University of Aveiro, Portugal (1 h)
2015-Sep	Unravelling glucan recognition systems by glucome-derived 'designer' oligosaccharide microarrays. 11th International Meeting GLUPOR 11, Portugal (45 min)
2015-Jun	Carbohydrate chips to identify protein binders. 6th European Conference of Chemistry (EuChem) in Life Sciences, Protein school, FCT-NOVA, Portugal (1 h)
2014-May	Glycan microarrays to decipher roles for glycans, challenging molecules of life. EMBO Workshop Glycobiology and glycochemistry: Applications to human health and disease, FCM-NOVA, Portugal (1 h)
2014-Jan	Deciphering glucan-recognition in immunity to fungal pathogens: the role of designer oligosaccharide microarrays. Seminar at CERMAV, France (1 h)

## ORAL COMMUNICATIONS AT PEER REVIEWED INTERNATIONAL CONFERENCES (4)

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2016-Jun	An integrative strategy to unravel carbohydrate:protein interactions in the Human Gut Microbiome. Summer Course Glycosciences, Groningen, Netherlands (Best poster award and invited oral presentation by Viviana Correia, PhD student under my Supervision)
2011-Jul	Patterns of carbohydrate recognition by glucan-binding proteins: Observations using neoglycolipid (NGL)-based microarrays. 9th Carbohydrate Bioengineering Meeting (CBM9), Portugal
2008-Nov	Malectin - a novel lectin of the endoplasmic reticulum and a candidate new player in the early steps of protein N-glycosylation. Annual Meeting of the Society for Glycobiology, USA
2008-Aug	Studies of glucan-recognition systems with designer oligosaccharide microarrays. Plant Polysaccharide Workshop, Sweden

## MEMBERSHIPS OF SCIENTIFIC SOCIETIES

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1999-present	Member of the Portuguese Biochemical Society (SPB)
2008-present	Member of the Society for Glycobiology
2011-present	Member of INSTRUCT network

## SELECTED PEER-REVIEWED PUBLICATIONS

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Total of 35 papers with over 1200 citations in Scopus (h-index 16); 17 representative publications in the field of glycan-microarrays and glycan ligand discovery are below:

1. Zhang H, **Palma AS\***, Zhang Y, Childs RA, Liu Y, Mitchell DA, Guidolin LS, Weigel W, Mulloy B, Ciocchini AE, Feizi T, Chai W Generation and characterization of  $\beta$ 1,2-glucosyl-oligosaccharide probes from Brucella

abortus cyclic  $\beta$ -glucan and their recognition by C-type lectins of the immune system. *Glycobiology*. 2016 Apr 6. [Epub ahead of print]

2. **Palma, A.S.\***, Liu, Y., Zhang, H., Zhang, Y., McCleary, B.V., Yu, G., Huange, Q., Guidolin, L.S., Ciocchini, A.E., Torosantucci, A., Wang, D., Carvalho, A.L., Fontes, C.M.G.A., Mulloy, B., Childs, R.A., Feizi, T., and Chai, W. (2015) "Unravelling glucan recognition systems by glycome microarrays using the 'designer' approach and mass spectrometry". *Mol Cell Proteomics*, 14: 974-88
3. Suits, M.D., Pluvineau, B., Law, A., Liu, Y., Palma, A.S., Chai, W., Feizi, T., Boraston, A.B. "Conformational Analysis of the Streptococcus pneumoniae Hyaluronate Lyase and Characterization of Its Hyaluronan-specific Carbohydrate-binding Module". *J Biol Chem*. 2014 Sep 26;289(39):27264-77
4. Gao, C., Liu, Y., Zhang, H., Zhang, Y., Fukuda, M.N., Palma, A.S., Kozak, R.P., Childs, R.A., Nonaka, M., Li, Z., Siegel, D.L., Hanfland, P., Peehl, D.M., Chai, W., Greene, M.I., Feizi, T. "Carbohydrate sequence of the prostate cancer-associated antigen F77 assigned by a mucin O-glycome designer array. *J Biol Chem*. 2014 Jun 6;289(23):16462-77 (#3).
5. Neu, U., Mahmood Khan, Z., Schuch, B., **Palma, A.S.**, Liu, Y., Pawlita, M., Feizi, T., Stehle, T. "Structures of B-Lymphotropic Polyomavirus VP1 in complex with oligosaccharide ligands" *PLoS Pathog* 9:e1003714, 2013.
6. Crusat, M<sup>1</sup>., Liu, J<sup>1</sup>., **Palma, A.S.<sup>¶</sup>**, Childs, R.A<sup>1</sup>., Liu, Y<sup>1</sup>., et al. Changes in the hemagglutinin of H5N1 viruses during human infection - Influence on receptor binding. *Virology*, 447: 326-337, 2013 (<sup>1</sup>co-first authors) (#8)
7. **Palma, A.S.**, Liu, Y., Childs, R.A., Herbert, C., Wang, D., Chai, W., Feizi, T. "The human epithelial carcinoma antigen recognized by monoclonal antibody AE3 is expressed on a sulfoglycolipid in addition to neoplastic mucins" *Biochem Biophys Res Commun*. 408:548-52, 2011 (#6)
8. Neu, U., Maginnis, M.S., **Palma, A.S.**, Stroeh, L.J., Nelson, C.D., Feizi, T., Atwood, W.J., Stehle, T.. Structure-function analysis of the human JC polyomavirus establishes the LSTc pentasaccharide as a functional receptor motif. *Cell Host & Microbe* 8:309-19, 2010 (#49)
9. Childs R.A<sup>1</sup>., **Palma, A.S.<sup>¶</sup>**, et al. "Receptor-binding specificity of pandemic influenza A (H1N1) 2009 virus determined by carbohydrate microarray" *Nat Biotechnol*. 27:797-9, 2009 (<sup>1</sup>co-first authors) (#158)
10. Torosantucci, A., Chiani, P., Bromuro, C., De Bernardis, F., **Palma, A.S.**, et al. "Protection by anti- $\beta$ -Glucan Antibodies is associated with restricted  $\beta$ -1,3 glucan binding specificity and inhibition of fungal growth and adherence" *PLoS ONE* 4, e5392, 2009 (#66)
11. Schallus, T., Jaeckh, C., Féeher, K., **Palma, A.S.**, et al. "Malectin - a novel carbohydrate-binding protein of the endoplasmic reticulum and a new player in the early steps of protein N-glycosylation" *Mol Biol Cell* 19: 3404-3414, 2008 (#71)
12. **Palma, A.S.**, Feizi, T., Zhang, Y., Stoll, M.S., Lawson, A.M., Díaz-Rodríguez, E., Campanero-Rhodes, M.A., Costa, J., Gordon, S., Brown, G.D. and Chai, W. "Ligands for the beta-glucan receptor, dectin-1, assigned using 'designer' microarrays of oligosaccharide probes (neoglycolipids) generated from glucan polysaccharides". *J Biol Chem* 281: 5771-5779, 2006 (#170).

## REVIEWS

1. **Palma, A.S.\***, Feizi, T., Childs, R.A., Chai, W. and Liu, Y. "The neoglycolipid (NGL)-based oligosaccharide microarray system poised to decipher the *meta*-glycome". *Curr Opin Chem Biol*, 18, 87-94, 2014.
2. Liu, Y., **Palma, A.S.**, Feizi, T. "Carbohydrate microarrays: key developments in glycobiology" *Biol Chem* 390, 647-56, 2009 (#79)

## CHAPTERS IN BOOKS

1. **Palma, A.S.\***, Zhang, Y., Childs, R.A., Campanero-Rhodes, M.A., Liu, Y., Feizi, T., Chai, W. Yann Chevolot (ed.), Carbohydrate Microarrays: Methods and Protocols, Methods in Molecular Biology, Volume 808, Chapter 23:337-59, 2012
2. Liu, Y., Childs, R.A., **Palma, A.S.**, Campanero-Rhodes, M.A., Stoll, M.S., Chai, W., Feizi, T. "Neoglycolipid-Based Oligosaccharide Microarray System: Preparation of NGLs and Their Noncovalent Immobilization on Nitrocellulose-Coated Glass Slides for Microarray Analyses". Yann Chevolot (ed.), Carbohydrate Microarrays: Methods and Protocols, Methods in Molecular Biology, Volume 808, Chapter 8:117-36, 2012
3. **Palma, A.S.**, Liu, Y., Muhle-Goll, C., Butters, T.D., Zhang, Y., Childs, R., Chai, W., Feizi, T. Methods in Enzymology, Elsevier Inc. Volume 478, Chapter 13: 265-86, 2010

\*Corresponding author; ¶Joint-first author; (#) number of citations in Scopus

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