

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Jesús		
Family name	Angulo Álvarez		
Gender (*)	Male	Birth date (dd/mm/yyyy)	02/01/1970
Social Security, Passport, ID number	410155154340, PAP322824, 28908793R		
e-mail	j.angulo@iiq.csic.es	URL Web	https://www.researchgate.net/profile/Jesus-Angulo-2
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-7250-5639		

(*) Mandatory

A.1. Current position

Position	Investigador Científico-CSIC; Honorary Associate Professor (UEA, UK)		
Initial date	16/12/2021		
Institution	Instituto de Investigaciones Químicas (CSIC-Univ. Sevilla)		
Department/Center	Química Bio-Orgánica	cicCartuja	
Country	Spain	Tel. number	954489566
Key words	Nuclear magnetic resonance; Protein-Ligand Interactions; Carbohydrates; Molecular Modelling; Structure and spectroscopy; Molecular recognition: structure and dynamics; Spectroscopy; Gels, Carbohydrate Hydrogels.		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2019-2021	Investigador Distinguido Beatriz Galindo Senior/Universidad de Sevilla/Spain
2019-2019	Associate Professor/University of East Anglia (UEA)/UK
2017-2019	Senior Lecturer/University of East Anglia (UEA)/UK
2016-2017	Lecturer/University of East Anglia (UEA)/UK
2013-2016	Research Fellow/University of East Anglia (UEA)/UK
2008-2013	Investigador Ramón y Cajal/IIQ-CSIC/Spain
2006-2008	Investigador Juan de la Cierva/IIQ-CSIC/Spain
2003-2006	MSCA Postdoc Fellow/Universität zu Lübeck/Germany

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Ph.D. in Chemistry	Universidad de Sevilla	2002
MSc. Advanced Chemistry	Universidad de Sevilla	2001
BSc. Chemistry	Universidad de Sevilla	1998

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Since Dec 2021, I am **Investigador Científico** at the **Instituto de Investigaciones Químicas** (CSIC-University of Sevilla). Previously I was a **“Beatriz Galindo” Senior Distinguished Researcher** at the Universidad de Sevilla, USE (2019-2021), awarded at the first call from the Spanish Government (only 40 positions among all knowledge areas for all Spanish universities). The international panel of experts awarded my application the **highest score in experimental sciences (9.9 out of 10)**. After my move to Seville, the University of



East Anglia (UEA) awarded me a **Honorary Associate Professor** position starting which I am still holding.

Previously, at UEA, I had been appointed **Research Fellow** in August 2013, becoming **Lecturer** in 2016, **Senior Lecturer** in 2017, and **Associate Professor** in 2019. Before, I had held a "**Ramón y Cajal**" award (2008-2013) at CSIC, (IIQ, Seville), a postdoctoral "**Juan de la Cierva**" fellowship at CSIC (2006-2008), and a prestigious postdoctoral "**Marie Curie Intra-European**" fellowship at the **University of Lübeck** (Germany, 2003-2005). At CSIC I worked in a world leader laboratory in **carbohydrate chemistry and structural glycobiology** (Head: Prof. M. Martin-Lomas), under the supervision of Dr Pedro M. Nieto. In Lübeck, I worked in the pioneering **laboratory of "affinity-NMR"** of Prof. Thomas Peters, learning **novel NMR spectroscopy techniques for protein-ligand interactions**. After returning to CSIC with a "**Marie Curie reintegration grant**" I worked on **NMR and computational chemistry** to study **interactions of glycans with protein receptors** in infection processes (anti-HIV-1 2G12 antibody, DC-SIGN and langerin lectins).

My research is on **Structural Organic Chemistry of Molecular Recognition**, focused on **structure and interactions of biologically active molecules**, with emphasis on **glycans**, by NMR spectroscopy and computational techniques. My research group has developed novel STD NMR approaches applied to biologically relevant systems as **gut microbiota sialidases**, **bacterial virulence factors**, **glycoside hydrolases**, and applications to **soft matter (hydrogels)**. My work has been **internationally recognized** (international publications, conference invitations), and relevant contributions from my research career are: (i) I pioneered the method to get **affinities of protein-ligand systems** by STD NMR now generally applied by scientists in the field, (ii) I was the first to demonstrate **STD NMR ability to characterize multimodal binding**, (iii) I developed the **spin-STD NMR** technique for kinetics of internal molecular rotations, and (iv) I developed **DEEP-STD NMR**, allowing for the first time to get additional information from STD NMR experiments to determine the bioactive orientation of a ligand in the active site of a protein.

In 2019: (i) I received the **NMR Prize Bruker-University of Seville**, (ii) I was included in the series "**ChemBioTalents**" from Wiley, which showcased next generation of emerging scientists in the field, and (iii) I received from the UEA the prestigious "**Transforming Education Award: PhD Supervisor of the Year 2019**". In 2020 I was in the **Young Chemists 2020** Special Collection from the journal **Chemistry – A European Journal** which featured young and emerging scientists from around the world. I have been (2012-2013) **Secretary** and currently I am **Vicepresident of the Specialized NMR Group (GERMN)** of the Spanish Royal Society of Chemistry (RSEQ). I sit as an **international expert in panels** for scientific evaluation (ANEP, AEI), and have been **examiner of 15 PhD thesis** in the UK, Spain, Denmark, and Italy. I am currently the **Research Director of the "Biomolecular Interactions Platform"** at cicCartuja center in Seville.

So far in my scientific career I have published 86 articles in SCI journals (4 reviews) and 5 book chapters. I am first author or corresponding author of 32 of them. I have an average of 29.8 citations per paper and an h-index of 28//29 (researcherID H-1253-2011//Scopus ID: 36545782500). In the last 5 years I have published 40 articles (52% within first decile [D1]; 74% within first quartile [Q1] mainly in areas of Chemistry) and 2 book chapters, and I have been supervisor of 7 PhD Thesis, 2 more underway at CSIC. Along my career I have given 15 oral communications, 30 invited lectures, and 5 plenary lectures, in national and international congresses. After several prestigious postdoctoral fellowships (*Marie Curie, Juan de la Cierva, y Ramón y Cajal*), in August 2013 I started my independent research group at UEA, Norwich (UK), where I received a prestigious BBSRC New Investigator project grant (BB/P010660/1). In the last 5 years I have been able to secure more than 1.9 M € in funding at UEA, the University of Seville, and CSIC. Publications from the last 5 years include articles in e.g. *Nat. Commun., Nat. Microbiol., PNAS, and J. Am. Chem. Soc.-Au* on NMR and molecular dynamics studies of protein-ligand complexes.

Part C. RELEVANT MERITS

C.1. Publications

[1] (8/9) Malec, K.; Monaco, S.; Delso, I.; et al.; Nartowski, K. P., **2023**. Unravelling the Mechanisms of Drugs Partitioning Phenomena in Micellar Systems via NMR Spectroscopy. **J. COLLOID INTERFACE SCI.**(in press).(AC)



- [2] Garcia-Garcia, A; Hicks, T; El Qaidi, S; Zhu, CR; Hardwidge, PR; Angulo, J; Hurtado-Guerrero, R. **2021**. NleB/SseK-catalyzed arginine-glycosylation and enteropathogen virulence are finely tuned by a single variable position contiguous to the catalytic machinery **CHEMICAL SCIENCE**. 12-36, pp.12181-12191. ISSN 2041-6520. (AC)
- [3] (13/15) Andrew Bell; Jason Brunt; Emmanuelle Crost; et al.; Nathalie Juge, **2019**. "Elucidation of a novel sialic acid metabolism pathway in mucus-foraging bacteria unravels mechanisms of adaptation to the gut" **NATURE MICROBIOLOGY**. 4-12, pp.2393-2404.
- [4] (14/17) J.B. Park; Y.H. kim; Y. Yoo; et al.; H.S Cho, **2018**. "Structural basis for arginine glycosylation of host substrates by bacterial effector proteins" **NATURE COMMUNICATIONS**. 9-4283. (AC)
- [5] (10/12) Sequeira, Saannya; Kavanaugh, Devon; MacKenzie, Donald A.; et al; Juge, Nathalie, **2018**. "Structural basis for the role of serine- rich repeat proteins from *Lactobacillus reuteri* in gut microbe-host interactions" **PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA**. 115-12, pp.E2706-E2715.
- [6] (17/18) C.D. Owen; L.E. Tailford; S. Monaco; et al.; N. Juge, **2017**. "Unravelling the specificity and mechanism of sialic acid recognition the gut symbiont *Ruminococcus gnavus*" **NATURE COMMUNICATIONS**. 8, pp.2196
- [7] Monaco, Serena; Tailford, Louise E.; Juge, Nathalie; Angulo, Jesus. **2017**. "Differential Epitope Mapping by STD NMR Spectroscopy To Reveal the Nature of Protein-Ligand Contacts" **ANGEWANDTE CHEMIE-INTERNATIONAL EDITION**. 56-48, pp.15289-15293. (AC)
- [8] Quiros, M. Teresa; Angulo, Jesus; Munoz, Maria Paz. **2015**. "Kinetics of intramolecular chemical exchange by initial growth rates of spin saturation transfer difference experiments (SSTD NMR)" **CHEMICAL COMMUNICATIONS**. 51-50, pp.10222-10225. (AC)
- [9] Munoz-Garcia, Juan C.; Chabrol, Eric; Vives, Romain R.; et al; Angulo, Jesus. **2015**. "Langerin-Heparin Interaction: Two Binding Sites for Small and Large Ligands As Revealed by a Combination of NMR Spectroscopy and Cross-Linking Mapping Experiments" **JOURNAL OF THE AMERICAN CHEMICAL SOCIETY**. 137-12, pp.4100-4110. (AC)
- [10] Angulo, Jesus; Enriquez-Navas, Pedro M.; Nieto, Pedro M. **2010**. "Ligand-Receptor Binding Affinities from Saturation Transfer Difference (STD) NMR Spectroscopy: The Binding Isotherm of STD Initial Growth Rates" **CHEMISTRY-A EUROPEAN JOURNAL**. 16-26, pp.7803-7812. (AC)

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

- [1] (Invited) Jesús Angulo. EUROMAR. European NMR Conference. **2021. Utrecht**, The Netherlands.
- [2] (Plenary) Jesús Angulo. XVII Meeting-School on Carbohydrate Chemistry. Italian Group of Carbohydrate Chemistry. **2021. Certosa di Pontignano**, Italy.
- [3] (Invited) Jesús Angulo. UK Proteoglycans meeting. UK Proteoglycans group. **2020. Leeds**, UK
- [4] (Invited) Jesús Angulo. INSTRUCT-ULTRA 3rd Structural Biology Meeting. INSTRUCT-ULTRA (Integrating Biology). **2019. Bratislava**, Slovakia
- [5] (Invited) Jesús Angulo. SMASH - Small Molecule NMR Conference. **2019. Porto**, Portugal.
- [6] (Invited) Jesús Angulo. Royal Society of Chemistry Carbohydrate Group conference. **2019. Reading**, UK.
- [7] (Invited) Jesús Angulo. Conference on Magnetic Resonance in Medicine & 25th National Magnetic Resonance Society Meeting. **2019. New Delhi**, India.
- [8] (Invited) Jesús Angulo. 7th EuCheMS ancillary meeting "Carbohydrates-tools for synthesis and analysis". EuCheMS. **2018. Liverpool**, UK.
- [9] (Invited) Jesús Angulo. International Workshop: "Biotechnology and glycobiology tools for human health". **2017. Guanajuato**, Mexico.
- [10] (Plenary) Jesús Angulo. IV Iberoamerican NMR Meeting. Sociedade Portuguesa de Química/Real Sociedad Española de Química. **2012. Aveiro**, Portugal.



C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

[1] HORIZON-MSCA-2021-DN-01 Project 101072717 — GlycoNoVi “Understanding the Role of Glycans in Human Norovirus Infection: a Key to Unlock New Therapies”. HORIZON TMA MSCA Doctoral Networks – 2021. **PI-beneficiary: Jesus Angulo**. IIQ-CSIC. **€236.971,20**.

[2] PY20_01176 “A ¹⁹F Protein and ¹H Ligand NMR Toolkit To Design Inhibitors Of Bacterial Virulence” Junta de Andalucía. Secretaría General de Universidades, Investigación y Tecnología. Proyectos I+D+I (PAIDI 2020). **PI: Jesus Angulo**. Universidad de Sevilla. 2020-2022. **€90.000,00**

[3] PID2019-109395GB-I00 “*Nuevas Herramientas STD NMR para obtener Estructuras 3D de Complejos Proteína-Ligando Débiles: Aplicación a Interacciones Proteína-Carbohidrato Biológicamente Relevantes*” Ministerio de Ciencia e Innovación/Agencia Estatal de Investigación, Plan Estatal de Investigación Científica y Técnica y de Innovación 2017-2020. **PI: Jesus Angulo**. Universidad de Sevilla/IIQ-CSIC. 2020-2023. **€102.850,00**

[4] BB/M011216/1 – 1777178 “*Sweet transfer in cholesterol homeostasis: Unveiling the molecular details of binding and GalNAc transfer by the enzyme GalNAc-T11 to Low-Density-Lipoprotein- Receptors LDLR*” Biotechnology and Biological Sciences Research Council (BBSRC). NRP Doctoral Training Partnership. **PI: Jesus Angulo**. University of East Anglia. 2019-2023. **£79.108,00**

[5] BB/M011216/1 – 2060717 “*How bacterial pathogens "sweeten" host proteins to avoid immunological responses: structural study of sugar transfer by bacterial virulence factors*” Biotechnology and Biological Sciences Research Council (BBSRC). NRP Doctoral Training Partnership. **PI: Jesus Angulo**. University of East Anglia. 2018-2022. **£76.228,00**

[6] BB/P010660/1 “*Towards understanding the glycan code: next generation structural glycobiology for accurate description of protein-glycan complexes*” Biotechnology and Biological Sciences Research Council (BBSRC) New Investigator Grant). **PI: Jesus Angulo**. University of East Anglia. 2017-2020. **£482.820,00**

[7] EP/N033337/1 “*New Enzymatically Produced Interpenetrating Starch-Cellulose Gels*” Industrial Biotechnology Catalyst (EPSRC, Innovate UK). **PI: Yaroslav Khimyak, co-PI: Jesus Angulo**. University of East Anglia. 2016-2020. **£3.500.000,00 (£610.417** for partners at UEA, Y. Khimyak & J. Angulo)

[8] BB/M011216/1 – 1777178 “*Sweetening Drug Delivery for Future Therapies: Hydrogels Based on Sugars for Biomedical Applications*”. Biotechnology and Biological Sciences Research Council (BBSRC) NRP Doctoral Training Partnership. **PI: Jesus Angulo**. University of East Anglia. 2016-2020. **£76.228,00**

[9] BB/M011216/1 – 1654460 “*Structural Glycobiology of Leukocyte Adhesion/Migration in the Lymphatics studied by NMR spectroscopy*”. Biotechnology and Biological Sciences Research Council (BBSRC)NRP Doctoral Training Partnership. **PI: Jesus Angulo**. University of East Anglia. 2015-2019. **£76.228,00**

[10] SLSF28 - R202961 “*Unveiling Commensal Bacterial Protein Glycosylation by High-Resolution NMR Spectroscopy Norwich Research Park Science Links Seed*”. **PI: Jesus Angulo**. University of East Anglia. 2016. **£15.000,00**