MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

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

Part A. PERSONAL INFORMATION

CV date	NOV 2021

First name	MARÍA ÁNGELA		
Family name	OLIVA BLANCO		
Gender (*)	FEMALE	Birth date (dd/mm/yyyy)	27/10/1976
Social Security, Passport, ID number	46930489R		
e-mail	marian@cib.csic.es	URL Web	https://www.marianoliva.com/
Open Researcher and Contributor ID (ORCID) (*): 0000-0002-2215-4639			

(*) Mandatory

A.1. Current position

Position	Permanent researcher CSIC			
Initial date	15/11/2020			
Institution	Consejo Superior de Investigaciones Científicas (CSIC)			
Department/Center	Structural and chemical biology	Centro de Investigaciones Biológicas Margarita Salas (CIB-Margarita Salas)		
Country	SPAIN		Teleph. number	0034 91 1097301
Key words	tubulin, microtubules, cytoskeleton, microtubule targeting agents, structural biology			

A.2. Previous positions (research activity interuptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
03.02.2020 –	Hired researcher / CSIC-CIB Margarita Salas / Spain
16.05.2012 – 25.12.2019	Ramón y Cajal contract / CSIC-CIB / Spain interruption maternity 26.07.2018 – 14.11.2018 interruption maternity 26.08.2015 – 15.12.2015
16.05.2009 – 15.05.2012	Juan de la Cierva contract / CSIC-CIB / Spain
01.09.2007 – 31.04.2009	Medical Research Council Career Development Fellow / MRC-Laboratory of Molecular Biology / UK
01.09.2005 – 31.08.2007	EMBO long-term fellowship / MRC-Laboratory of Molecular Biology / UK
18.05.2003 – 24.10.2003	FPI-intership / MRC-Laboratory of Molecular Biology / UK
01.08.2001 – 31.07.2005	Ministerio Ciencia y Tecnología FPI fellowship/ CSIC-CIB / Spain
01.04.2001 – 31.07.2001	CSIC contract / CSIC-CIB / Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Biology Degree	Universidad Complutense Madrid / Spain	2000
PhD. Biochemistry and Molecular Biology	Universidad Complutense Madrid / Spain	2005

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

My research career has been focused on understanding the activation switch of tubulins and its pharmacological regulation, with the ultimate goal of translating this information to control the related biological processes.

I gained a PhD in Biochemistry and Molecular Biology under Dr. Andreu supervision studying the biochemistry of bacterial cell division protein **FtsZ (**tubulin-like) and, contributing to outline the morphology and dynamics properties of the filaments assembled. A six months internship at Dr. Löwe's group at the MRC-Laboratory of Molecular Biology (Cambridge, UK) got me introduce to the structural biology field. In this short period of time, I: i) defined key aspects of FtsZ mechanism of action, information that is essential on seeking new antibiotics targeting bacterial cell division, ii) proposed a hypothesis of evolution of tubulin-like proteins that now is widely accepted and, iii) contribute to the characterization of the closet homolog to tubulin found in bacteria, **BtubA/B**. A continuous collaborative relationship with my tutors has allowed me to contribute on getting further insights into the molecular mechanism of FtsZ. As a postdoctoral at Dr. Löwe's group I get trained and full skilled on structural studies for unravelling the mechanisms involve on the natural (through protein DivIVA) and pharmacological regulation of FtsZ. Remarkably, the structural studies performed on **DivIVA** allowed to classify this protein as a new Intermediate Filament in bacteria. Later, as a JdC postdoctoral researcher in Madrid the combination of biochemical and structural studies let me to present the first tubulin-like protein encoded in a virus, **TubZ**, proving the spreading of this family of proteins among kingdoms.

In 2012, I lead my own research group at CSIC-CIB (Madrid, Spain), focusing on understanding the **activation and regulation mechanisms of tubulin family of proteins**. Our aim is to unravel the evolution of tubulins, how these proteins are involved on multiple biological processes (mainly DNA segregation and long-distances transport) and, the natural and pharmacological regulation of these functions. Since the beginning of COVID pandemic, we have expanded our research interest to the interactions of virus with the cytoskeleton. My group exploits the opportunity offered by a multidisciplinary approach combining biochemistry, biophysics and structural studies. We have performed key studies: i) on understanding the origin and evolution of tubulins, ii) presented data supporting new hypothesis about microtubules stability and dynamics, iii) contributed on the discovery of new drugs and binding sites for the pharmacological modulation of tubulin and, iv) have developed methodological tools for *in vitro* molecular characterization of filament's function. My group has embraced national and international PhDs (one finished and one ongoing) and 8 master and undergraduate students. During this time, the work has been funded through grants of the Spanish Research System (RYC2011-07900 and BFU2013-47014). The lack of a continuous relationship with CSIC avoids me to apply for national grants between 2017 – 2020. Instead, I have kept Technological Support Contracts with PharmaMar S.A. (https://pharmamar.com/) that currently has one of the drugs we have studied in clinical phase III (PM150534). Currently, I am co-PI in two projects with Dr. Diaz JF. The present proposal will be part of a new unit based on Biological, Immunological and Chemical Drugs for Global Health at CIB (BICS).

I belong to the Spanish Societies of Biophysics (SBE) and of Biochemistry and Molecular Biology (SEBBM) and as a user of synchrotron radiations sources I also belong to Spanish Synchrotron Users Association (AUSE). I am part of ALBA Synchrotron evaluation panel (beamlines of macromolecular crystallography, SAXS and WAXS and, cryo soft X-ray tomography). As part of my commitment with structural biology approaches, I am one of the three main proposers for a new BioSAXS beamline at ALBA synchrotron (pre-proposal approved, full-proposal evaluation in January), with the support of more than *20 national and international research centers*.

Besides, I am on the evaluation board of the DAAD (Germany Agency for Undergraduate and Graduate Fellowships) and the ANEP. I have been involved in thesis evaluation panels and, I am scientific reviewer in field specific and general journals (Nature, J Bacteriol, J Virol, Frontiers, etc.). I also have edited a special issue of the International Journal of Molecular Sciences (IJMS).

Finally, I have been part of the UIMP teacher board for the Summer School and the Molecular and Cellular Integrative Biology Master and, I am committed with outreach activities through oral presentations at Secondary Schools (CSIC-program), mentoring activities (STEMadrid program) and with a review in the academic encyclopedia eLS (DOI: 10.1002//9780470015902.a0025586).

H index: 12. Total citations: 880 Total publications: 24

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1. Scientific paper: **Oliva MA**, Tosat-Bitrián C, Barrado-Gil L, *et al.*, Diaz JF (CA), Palomo V (CA), Alonso C (CA). Effect of clinically used microtubules targeting drugs on transport function and viral infection. **2021**. *Under review*. (1/16)

2. Scientific paper: Estévez-Gallego J, Pera B, Álvarez-Bernard B, *et al.*, **Oliva MA (CA).** Microtubules stabilization through the laulimalide/peloruside biding site: minimal requirements for binding and activity. **2021**. *Submitted.* **Corresponding author.** (20/20)

3. Scientific paper: Matthew S, Chen QY, Ratnayake R *et al*. **Oliva MA (CA)**, Luesch H (CA) **2021**. Gatorbulin-1, a distinct cyclodepsipeptide chemotype, targets a seventh tubulin pharmacological site. *Proc Natl Acad Sci USA,* 118 (9): e2021847118. DOI: 10.1073/pnas.2021847118. **Corresponding author.** (13/14) Q1, IP 11.2

4. Scientific paper: **Oliva MA**, Prota AE, Rodríguez-Salarichs J, *et al*. Diaz JF (CA), **2020**. Structural basis of noscapine activation for tubulin binding. *J Med Chem*, 63 (15): 8495-8501. DOI:10.1021/acs.jmedchem.0c00855. (1/10) Q1, IP 6.01

5. Scientific paper: Estévez-Gallego J, Josa-Prado F, Ku S, *et al.* **Oliva MA (CA). 2020**. Structural model for differential cap maturation at growing microtubule ends. *eLife,* 9 e50155. DOI: 10.7554/eLife.50155. **Corresponding author**. (17/17) Q1, IP 7.55

6. Scientific paper: Martín-García B, Martín-González A, Carrasco C *et al*., Moreno-Herrero F (CA), **Oliva MA (CA)**. **2018.** The TubR-centromere complex adopts a double-ring segrosome structure un type III partition systems. *Nucleic Acids Res* 46 (11): 5704-5716. DOI: 10.1093/nar/gky370. **Corresponding author**. (9/9) Q1, IP 10.16

7. Scientific paper: Wagstaff JM, Tsim M, **Oliva MA**, García-Sanchez A, Kureisaite-Ciziene D, Andreu JM, Löwe J (CA). **2017.** A polymerization-associated structural switch in FtsZ enables treadmilling of model filaments. *mBio* 8 (3). DOI: 10.1128/mBio.00254-17. (3/7). Q1, IP 6.97.

8. Scientific paper: Fuentes-Pérez ME, Nuñez-Ramírez R, Martín-González A, Juan-Rodríguez D, Llorca O, Moreno-Herrero F, **Oliva MA (CA)**. **2017**. TubZ filament assembly dynamics requires the flexible C-terminal tail. *Sci Rep* 7. DOI: 10.1038/srep43342. **Corresponding author.** (7/7). Q1, IP 5.53

9. Review: **Oliva MA (CA). 2016.** Segrosome complex formation during DNA trafficking in bacterial cell division. *Front Mol Biosci.* 3 DOI: 10.3389/fmolb.2016.00051. **Corresponding author**. (1/1)

10. Scientific paper: **Oliva MA (CA)**, Martin-Galiano AJ, Sakaguchi Y, Andreu JM (CA). **2012**. Tubulin homolog TubZ in a phage-encoded partition system. *Proc Natl Acad Sci* 109 (20):7711-7716. DOI: 10.1073/pnas.1121546109. **Corresponding author**. (1/4). Q1, IP 9.68.

C.2. Congress

1. Invited Speaker. **Oliva MA***. Targeting microtubules beyond cancer. 43rd SEBBM Meeting. 2021. Barcelona (Spain).

2. Invited Speaker. Estévez-Gallego J, Josa-Prado F, Buey RM, Balaguer FA, Prota AE, Lucena-Agell D, Kamma-Lorge C, Steinmetz MO, Barasoain I, Kamimura S, Díaz, JF, **Oliva MA***. Structural model for differential cap maturation at growing microtubules ends. 5th Meeting of the Italian (AIC) and Spanish Crystallographic (GE3C) Associations (MISCA V). 2019. Napoli (Italy).

3. Poster. Estévez-Gallego J, Josa-Prado F, Buey RM, Balaguer FA, Prota AE, Lucena-Agell D, Kamma-Lorge C, Steinmetz MO, Barasoain I, Kamimura S, Díaz, JF, **Oliva MA***. Structural model for differential cap maturation at growing microtubules ends. Instruct Biennial Structural Biology Conference. 2019. Alcalá de Henares (Spain).

4. Oral presentation. Martín-García B; Martín-González A; Hernández-Arriaga AM; Ruiz-Quero R; Díaz-Orejas R; Moreno-Herrero F; **Oliva MA*.** Transcriptional regulation and DNA segregation through the assembly of the nucleoprotein complex TubR/tubC. XI RANN (Meeting on Nucleic Acids and Nucleosides). 2017. Cantoblanco (Spain).

5. Oral presentation. Fuentes-Pérez ME; Núñez-Ramírez R; Martín-González A; Juan-Rodriguez D; Llorca O; Moreno F; **Oliva MA*.** Structural basis of TubZ filament assembly and dynamic modulation. EMBO Workshop Bacterial cell división: orchestrating the ring cycle. 2016. Praga (Czech Republic).

6. Poster. Fuentes-Pérez ME; Núñez-Ramírez R; Martín-González A; Juan-Rodriguez D; Llorca O; Moreno F; **Oliva MA*.** Structural basis of TubZ filament assembly and dynamic modulation. Plasmid Biology. 2016. Cambridge (UK).

7. Oral presentation. Fuentes ME; Moreno F; **Oliva MA***. TubZ filaments conformational change underlying GTP hydrolysis: C terminal tail implications in the opening of the protofilament twist. XIV Congress of the Spanish Biophysical Society. 2014. Alcalá de Henares (Spain).

8. Poster (1st prize). Martín-Galiano AJ; Sakaguchi Y; Andreu JM. **Oliva MA***. A TubZ tubulin homolog in a phage partition system. Exploiting bacteriophages for bioscience, biotechnology and medicine (the 5th in a biennial series). 2014. London (UK).

9. Poster. Fuentes ME; Moreno F; **Oliva MA***. Straightening of TubZ filaments upon GTP hydrolysis and role of C-terminal tail. EMBO Symposium: Molecular machines – Lessons from integrating structure, biophysiscs and chemistry. 2014. Heidelberg (Germany).

10. Poster. Martín-Galiano AJ; Sakaguchi Y; Andreu JM. **Oliva MA***. A TubZ tubulin homolog in a phage partition system. Gordon Research Conference: Bacterial Cell Surfaces. 2012. Vermont (USA).

C.3. Research projects

1. SGL2103051. Estrategias para quimioterapia antiviral de amplio espectro basada en moduladores de microtúbulos (Project 9.2. Subproject 9.2.1). Fondos de Recuperación Europeos WP9 Plataforma de Antivirales. Jan 2021 – Dec 2022. 299.141 €. PI: Diaz JF / **Oliva MA**.

2. 20202020E301. Interrupción de los procesos virales de transporte mediados por microtúbulos. CSIC. Dec 2020 – Dec2021. 45.000 €. PI: Diaz JF / **Oliva MA**.

3. Tuning tubulin dynamics and interactions to face neurotoxicity: a multidisciplinary approach for training and research (TubInTrain). ERC_H2020_MSCA-ITB-EJD. 2019 – 2023. 3.409.972,92 €. Coord: Daniele Passarella. IP: Diaz JF

4. BFU2013-47014. Molecular basis of segrosome organization in type III partition systems. Ministerio de Economía y Competitividad. 2014 – 2017. 108.900 €. PI: **Oliva MA**

5. RYC-2011-07900. Structural and functional study of TubZRS DNA partition system from Clostridium botulinum C phage: molecular basis of phage segregation. Ministerio de Economía y Competitividad. 2012 – 2014. 15.000 €. PI: **Oliva MA**

C.4. Contracts, technological or transfer merits.

Contrato de Apoyo Tecnológico PharmaMar, S.A. (01/01/2021 – 31/03/2022). 58.840,85 €.

Contrato de Apoyo Tecnológico PharmaMar, S.A. (23/07/2018 – 23/07/2019)- 33.880,00 €.

Patent: "The CIBMS DNA vaccine against Covid 19" by Alcolea PJ, Larraga J, Alonso A, Loayza F, **Oliva MA**, Montoya M, Larraga V. *Submitted to the Patent Office by Hoffmann SL.*