

Fecha del CVA	28/10/2020
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## Parte A. DATOS PERSONALES

Nombre y Apellidos	Miriam Royo Expósito		
DNI/NIE/Pasaporte		Edad	
Núm. identificación del investigador	Researcher ID	B-1665-2013	
	Scopus Author ID	7006248106	
	* Código ORCID	0000-0001-5292-0819	

\* Obligatorio

### A.1. Situación profesional actual

Organismo	Consejo Superior de Investigaciones Científicas		
Dpto. / Centro	Tensoactivos y Nanobiotecnología / Instituto de Química Avanzada de Cataluña		
Dirección	Instituto de Química Avanzada de Cataluña, Jordi Girona 18 -.26, 08034, Barcelona		
Teléfono	Correo electrónico	<a href="mailto:miriam.royo@iqac.csic.es">miriam.royo@iqac.csic.es</a>	
Categoría profesional	Investigadora científica CSIC	Fecha inicio	
Palabras clave	Síntesis en fase sólida; Nanoestructuras; Relación estructura-actividad; Síntesis de compuestos biológicamente activos; Ciencias naturales y ciencias de la salud		

### A.2. Formación académica (título, institución, fecha)

Licenciatura/Grado/Doctorado	Universidad	Año
Doctora en Ciencias Químicas	Universitat de Barcelona	1994
Tesina en Química Orgánica	Universitat de Barcelona	1988
Licenciatura en Ciencias Químicas, especialidad Química Orgánica	Universitat de Barcelona	1987

### A.3. Indicadores generales de calidad de la producción científica

Number of PhDs supervised =15

Number of total publications: 131 Number of Q1 publications:66

**JCR** Total cites= 2397 Total h-index = 28

**Scopus** Total citations= 2653 Total h-index = 28

**Google Scholar** Total cites = 3709 Total H-index = 33 i-10 index= 99

## Parte B. RESUMEN LIBRE DEL CURRÍCULUM

During PhD I have worked on the study of the effect of helix dipole on the organization when they form dimers or trimers (JACS 1998) and in the development of two new Cys protecting groups (J. Chem. Soc. Perkin Trans. I 1995). From 1994 to 1996, I have worked as post-doctoral researcher at the Beth Israel Deaconess Medical Center-Harvard Medical School, Division of Bones and Mineral Metabolism (Boston, USA). In this period my work was focused on the development of PTH/PTHrP peptide ligands applied to osteoporosis, the design and synthesis of GPCR loop mimics and synthesis (JACS 1996, Biopolymers 1996, JBC 1998) of  $\alpha\beta 3$  peptide ligands.

In 1997 I initiated my work as post-doctoral researcher at the University of Barcelona (Spain) focused on the synthesis and study of potential applications of a new family of polyproline-peptide based dendrimers (JACS 2002; Eur. J. Org. Chem. 2002; Biopolymers 2004, 2005; JOC 2005; Chem, Rev. 2005) the development of new methods for combinatorial chemistry (Org. Lett. 2000, 2003, 2004) and the synthesis and structural elucidation of natural depsipeptides (JACS 2001, Eur. J. Org. Chem. 2001, Org. Lett. 2003). During this period, I began to supervise PhD and master students and some research lines (dendrimers).

In 2002 I was granted with a Ramon y Cajal contract to work at the Barcelona Science Park as director and PI of the Combinatorial Chemistry Unit (UQC-PCB), where I initiated my independent research career. From this moment, my research has been focused in the

development of new chemical tools with potential therapeutic application. My group has developed a new family of foldamers, g-peptides based on cis-4-aminoproline (JACS 2004; JACS 2005; Org. Bioorg. Chem. 2012). These compounds have the ability to cross cell-membranes of specific cells, being strong candidates to be considered transporters (JACS 2005; Chem. Comm. 2012). We have been also worked in the development of new therapeutic and pharmacological tools for class A GPCRs (J. Med. Chem. 2007; ChemMedChem 2009; J. Med. Chem. 2011; J. Med. Chem. 2009; JPET 2010, Eur. J. Med. Chem. 2015 and J. Med. Chem. 2018). We have also developed a new family of biocompatible oligoethylen glycol based dendrimers and we are studying their applications in biomedicine (Bioconj. Chem. 2007, 2009, 2011; Org. Bioorg. Chem. 2012, Eur. J. Org. Chem. 2013, 2014; Macromolecules 2014; Org. Lett. 2014. Acta Biomater. 2014). Furthermore, We have also developed novel components for the development of targeted protein delivery systems for Fabry disease (Nano Lett. 2013, Adv. Health. Mat. 2016, ACS Applied Mat. Interf. 2016, US14/411,097). During this period as head of the UQC-PCB I performed my own research lines and collaborative projects with companies, specially pharmaceutical and biotechnological (Uriach, Palau-Pharma, Almirall, Oryzon Genomics, Genmedica Therapeutics, Ferrer, Noscira, Lucta, Servier, NeoPharm Obesity among others). In 2007 I became member of the CIBER BBN, initiating a strong collaborative network, mainly focused in the nanomedicine area.

In July 2018, I joined the Institute of Advanced Chemistry of Catalonia (IQAC-CSIC), as scientific researcher forming a new group namely "Multivalent system for nanomedicine" (MS4N). Our objectives are to explore the versatility and applicability of the multivalent chemical tools developed and study their application in different biomedical areas.

## Parte C. MÉRITOS MÁS RELEVANTES (ordenados por tipología)

### C.1. Publicaciones

AC: Autor de correspondencia; (nº x / nº y): posición firma solicitante / total autores

- 1 Artículo científico.** Edgar Cristóbal-Lecina; Daniel Pulido; Pau Martín-Malapartida; Maria J. Macias; Fernando Albericio. 2020. Synthesis of Stable Cholesteryl-Polyethylene Glycol-Peptide Conjugates with Non-Disperse Polyethylene Glycol Length ACS Omega. ACS. 5, pp.5508-5519.
- 2 Artículo científico.** Daniel Carbajo; Fernando Albericio; Peter Fransen; Ayman El-Faham; Miriam Royo. 2019. Pseudo-Wang handle for the preparation of fully protected peptides. Synthesis of Liraglutide by fragment condensation Organic Letters. ACS. 21, pp.2459-2463.
- 3 Artículo científico.** Daniel Pulido; Verónica Casadó-Anguera; Laura Pérez-Benito; et al; Miriam Royo. 2018. Design of a true bivalent ligand with picomolar affinity for a G protein-coupled receptor homodimer Journal of Medicinal Chemistry. ACS. 61, pp.9335-9346.
- 4 Artículo científico.** Marina Gianotti; Ibane Abasolo; Mireia Oliva; et al; Simó Schwartz. 2016. Highly versatile polyelectrolyte complexes for improving the enzyme replacement therapy of lysosomal storage disorders ACS Applied Materials & Interfaces. ACS. 8, pp.25741-25752.
- 5 Artículo científico.** Anabel Molero; Marc Vendrell; Jordi Bonaventura; et al; Miriam Royo. 2015. A solid-phase combinatorial approach for indoloquinolizidinepeptides with high affinity at D1 and D2 dopamine receptors European Journal of Medicinal Chemistry. Elsevier. 97, pp.173-180.
- 6 Artículo científico.** Carme Pastells; Gerardo Acosta; Nuria Pascual; Fernando Albericio; Miriam Royo; M. Pilar Marco. 2015. An immunochemical strategy based on peptidoglycan synthetic peptide epitopes to diagnose Staphylococcus aureus infections. Analytica Chimica Acta. 889, pp.203-211.
- 7 Artículo científico.** C. de la Torre; Isolda Casanova; Gerardo Acosta; et al; Ramón Martínez-Mañez. 2015. Gated mesoporous silica nanoparticles using a double-role circular peptide for the controlled and target-preferential release of doxorubicin in CXCR4-expressing lymphoma cells Advanced Functional Materials. 25, pp.687-695.

- 8 **Artículo científico.** Daniel Pulido; Fernando Albericio; Miriam Royo. 2014. Controlling multivalency and multimodality: up to pentamodal dendritic platforms based on diethylenetriaminepentaacetic acid Cores Organic Letters. ACS. 16, pp.1318-1321.
- 9 **Artículo científico.** Peter Fransen; Daniel Pulido; C. Sevrin; C. Granfils; Fernando Albericio; Miriam Royo. 2014. High control, fast growth OEG-based dendron synthesis via a sequential process of copper free-diazo transfer and click chemistry. Macromolecules. ACS. 47, pp.2585-2591.
- 10 **Artículo científico.** Carolina Torres-García; Daniel Pulido; Fernando Albericio; Miriam Royo; Ernesto Nicolás. 2014. Triazene as a powerful tool for solid-phase derivatization of phenylalanine containing peptides: Zygosporamide analogues as a proof of concept Journal of Organic Chemistry. ACS. 79, pp.11409-1415.

## C.2. Proyectos

- 1 Multivalent systems for Nanomedicine, MS4N, RTI2018-093831-B-I00 Ministerio de Ciencia, Innovación y Universidades, MICINN. Miriam Royo Exposito. (Consejo Superior de Investigaciones Científicas). 01/01/2019-31/12/2022. 181.500 €.
- 2 Targeted Quatsome nanocarriers for the delivery of microRNA for neuroblastoma therapy, TAG-SMARTLY CIBER BIOINGENIERIA BIOMATERIALES Y NANOMEDICINA (CIBER-BBN). Nora Ventosa. (CIBER BIOINGENIERIA BIOMATERIALES Y NANOMEDICINA (CIBER-BBN)). 01/01/2020-31/12/2021. 7.000 €.
- 3 ADVISOR-ACE2-derived peptides super-binders with enhanced efficacy for inhibition of SARS-CoV2 infection Jacinto López Sagaseta. (Consejo Superior de Investigaciones Científicas). 15/08/2020-14/08/2021. 31.053 €.
- 4 Point-of-care test for the rapid of SARS-CoV2, POC4CoV, CSIC-COV19-041 Consejo Superior de Investigaciones Científicas. César Fernández. (Consejo Superior de Investigaciones Científicas). 01/04/2020-31/03/2021. 55.575 €.
- 5 Smart multifunctional GLA-nanoformulation for Fabry disease, SMART4FABRY, Grant number: 720942-2 Miriam Royo Expósito. (CIBER BIOINGENIERIA BIOMATERIALES Y NANOMEDICINA (CIBER-BBN)). 01/01/2017-31/12/2020. 295.965 €.
- 6 Chemical tools to study their interaction with biological barriers and GPCR oligomers, SAF2014-60138-R Ministerio de Economía y Competitividad, MINECO, Programa Estatal de I+D+i Orientada a los Retos de la Sociedad 2014. Miriam Royo Expósito. (Fundación Parc Científic de Barcelona -IQAC-CSIC). 01/01/2015-31/12/2018. 215.380 €.

## C.3. Contratos

- 1 Estudio de PEGilación de micropartículas carboxiladas y puesta a punto de un método de cuantificación Biokit, S.A. Miriam Royo Expósito. (Fundación Parc Científic de Barcelona). 15/11/2015-13/06/2016. 23.333 €.
- 2 Synthesis of compounds of biological interest Servier Laboratoires. S. L.. Miriam Royo Expósito. (Fundación Parc Científic de Barcelona). 01/10/2015-01/04/2018. 225.000 €.
- 3 Proyecto de Química Médica Landsteiner Genmed. Miriam Royo Expósito. (Fundación Parc Científic de Barcelona). 08/05/2015-30/12/2015. 280.000 €.
- 4 Proyecto de Química Médica NeoPharm Obesity, S.L.. Miriam Royo Expósito. (Fundación Parc Científic de Barcelona). 01/04/2014-01/06/2015. 120.000 €.
- 5 Identificación de inductores umami y en el desarrollo de nuevos sistemas celulares adecuados al screening funcional de sus moléculas LUCTA, S.A.. Miriam Royo Expósito. (Fundación Parc Científic de Barcelona). 01/03/2014-01/03/2015. 70.000 €.

## C.4. Patentes