MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

CV date	8-9-2021

Part A. PERSONAL INFORMATION

First and Family name	Rosario González Muñiz		
Social Security, Passport, ID number		Age	
Researcher numbers	Researcher ID	L-9074-2014	
	Orcid code	0000-0001-8833-4328	

A.1. Current position

Name of University/Institution	Agencia Consejo Superior de Investigaciones Científicas		
Department	Instituto de Química Médica		
Address and Country	Juan de la Cierva 3, 28006 Madrid, Spain		
Phone number	+34912587434	E-mail	Iqmg313@iqm.csic.es
Current position	Scientific Researcher	From	26-07-2002
Espec. cód. UNESCO	2390, 239001, 2306, 230610, 230202, 230224		
Palabras clave	Medicinal chemistry, peptides, peptidomimetics, foldamers, chiral hereocycles, organic synthesis, protein-protein interactions, modulators of ion channels and associate proteins (TRPs, nAChR, MR), SARS-CoV-2 Mpro inhibitors		

A.2. Education

PhD	University	Year
First Degree in Chemistry	UAM	1982
PHD in Chemistry	UAM	1987

A.3. JCR articles, h Index, thesis supervised

-Research periods: 6 (1984-2019)
-Total citations: 2162 (Scopus) Mean citations/year, last 5 years: 108 (150 citations in 2020).
-Total publications: 134 research papers (65 % Q1), 14 reviews (100% Q1), 7 book chapters.
-H-index: 26
-Total Thesis: 9, and 2 in progress.
-Total Patent applications: 12, 2 PCT, 1 licensed.
-Total competitive projects: 34 (12 as PI)
-Total R&D contracts: 3

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Academic studies in Organic Chemistry UAM). Postdoctoral stay at the University René Descartes (Paris V, 1988-1990). She is developing her career at the IQM-CSIC, being a Tenured Scientist (1889-2002) and a Scientific Researcher (2002-). Deputy Director of the IQM (2005-2011). Member of the Council of the Spanish Society of Therapeutic Chemistry (2003-2011), Secretary (2003-2007). Spanish representative at the European Peptide Society Council (2018-)

Research experience: development of new synthetic methods for obtaining novel chemical structures and their application to the search for new therapeutic compounds. The research has been particularly focused on the field of bioactive peptide derivatives, peptidomimetics and chiral heterocycles derived from amino acids, for diverse biological applications. Regarding the organic chemical objectives, it is worth mentioning the work carried out on peptide bond surrogates (cetomethylene and cyanomethyleneamino), the stereoselective synthesis of various chiral heterocycles, especially a new family of β-lactams with unusual substitution, the preparation and study of new mimetics of peptide secondary structure elements and peptide conjugates of interest in biological chemistry. From the methodological point of view, she has implemented in the group the use of solid phase synthesis for the generation of combinatorial chemistry libraries, both peptides and small organic molecules. Regarding medicinal chemistry objectives, she has worked on the design, synthesis and study of protease inhibitors (including a family of anti-HCMV), neuropeptide antagonists (CCK, NT, PACAP) and modulators of protein-protein interactions (VEGF -VEGFR) of interest in cancer. More recently, she focuses her efforts on the search for modulators of ion channels and associated proteins (TRPs, nACh, MR, GPR37). In 2020 we start also to work on the search for SARS-CoV2 main protease inhibitors, to contribute in the search for new antivirals for COVID-19 pandemic with initial promising compounds. Participation,

direction and coordination of different research projects of National Plans (2 CAICYT, 2 FAR, 6 SAF, 1 BFU, 1 RTI), Community of Madrid (5), CSIC (4), EU (2), La Caixa Foundation (1) and MICCIN (1 CONSOLIDER-INGENIO). Participation and PI in research contracts with Deretil SA, PharmaMar SA and Givaudan AG. Collaboration with Novo Nordisk (within the EU project of the Human Capital and Mobility Program, 3 years). She is author of more than 145 publications in indexed journals, 7 book chapters, 19 proceedings and some divulgation articles. Inventor in 12 patents. More than 160 communications in national and international conferences, including 11 invited conferences and 29 oral presentations. Supervisor or co-supervisor of 9 doctoral thesis, 14 postgraduate works (DEAs, Masters), 6 undergraduate/internship students, 5 research initiation scholars, 4 FP students and 10 postdoctorals. She regularly participates in the organization of meetings, seminars and scientific conferences (organizing and/or scientific committees) and has experience in R&D management (different committees of experts).

Part C. RELEVANT MERITS

C.1. Publications (including books, selection of last years)

1. Bonache, M.A.; Llabrés, P.J.; Martín-Escura, C.; De la Torre-Martínez, R.; Medina-Peris, A.; Gómez-Monterrey, I.; Roa, A.M.; Fernández-Ballester, G.; Ferrer-Montiel, A.; Fernández-Carvajal, A.; González-Muñíz, R. Phenylalanine-derived β-Lactam TRPM8 modulators. Configuration effect on the antagonist activity. **Int. J. Mol. Sci., 2021**, 22, 3390. **Q1**

2. Butrón, D.; Zamora-Carreras, H.; Devesa, I.; Treviño, M.A.;Abian, O.; Velázquez-Campoy, A.; Bonache M.A.; Laura Lagartera, L.; Martín-martínez, M.; González-Rodríguez, S.; Baamonde, A.; Fernández-Carvajal, A.; Ferrer-Montiel, A.; Jiménez, M.A.; González-Muñiz, R. DD04107-Derived neuronal exocytosis inhibitor peptides: evidences for signaptotagmin-1 as a putative target. **Bioorg. Chem.** 2021, 115, 105231. Q1

3. Algar, S.; Martín-Martínez, M.; González-Muñiz, R. Evolution in non-peptide α–helix mimetics on the road to effective protein-protein interaction modulators. **Eur. J. Med. Chem. 2020**, ASAP. https://doi.org/10.1016/j.ejmech.2020.113015. D1

4. Bonache, M.A.; Martín-Escura, C.; LLabrés, P.J.; De la Torre-Martínez, R.; Molina, A.; Fernández-Carvajal, A.; Fernández-Ballester, G.; Ferrer-Montiel, A.; González-Muñiz, R. Highly functionalized β-lactams and 2-ketopiperazines as TRPM8 antagonists with antiallodynic activity**. Sci. Rep. 2020**, 10, 14154. Q1

5. González-Muñiz, R., Bonache, M.A.; Martín-Escura, C.; Gómez Monterrey, I. Recent Progress in TRPM8 modulation: An update. **Int. J. Mol. Sci. 2019**, 20, E2618. Q1

6. Pérez de Vega, M.J.; Fernandez Mendivil, C.; de la Torre Martínez, R.; González-Rodríguez,S.; Mullet, J.; Sala, F.; Sala, S.;Criado, M.;Moreno-Fernández, S.; Miguel, M.; Fernández-Carvajal, A.; Ferrer-Montiel, A.; García López, M.; González-Muñiz, R."1-(2',5'-Dihydroxyphenyl)-3-(2-fluoro-4-methoxyphenyl)-1-propanone: A positive ' modulator of α7 nicotinic receptors with analgesic and neuroprotective activity" **ACS Chem. Neurochem**. **2019**, 10, 3900-3909.Q1

7.Urquiza, P.; Lain, A.; Sanz-Parra, A.; Moreno, J.; Bernardo-Seisdedos, G.; Dubus, P.; Gonzalez, E.; Gutierrez-de-Juan, V.; Garcia, S.; Erana, H.; San Juan, I.; Macias, I.; Ben Bdira, F.; Pluta, P.; Ortega, G.; Oyarzabal, J.; Gonzalez-Muniz, R.; Rodriguez-Cuesta, J.; Anguita, J.; Diez, E.; Blouin, J.-M.; de Verneuil, H.; Mato, J. M.; Richard, E.; Falcon-Perez, J. M.; Castilla, J.; Millet, O. "Repurposing ciclopirox as a pharmacological chaperone for the treatment of congenital erythropoietic porphyria" **Sci. Transl. Med. 2018**, *10*, eaat7467. D1

8.De la Torre-Martínez, R.; Bonache, M.A.; Pedro J. LLabrés, P.J.; Balsersa, B.; Fernández-Carvajal, A.; Fernández-Ballester, G.; Ferrer-Montiel, A.; M. Jesús Pérez de Vega, M.J.; González-Muñiz, R. . Synthesis, high throuput screening and pharmacological characterization of β–lactam derivatives as TRPM8 antagonists. **Sci. Rep. 2017**, 7:10766. Q1

9. Pérez de Vega, M.J.; Gómez-Monterrey, I.; Ferrer-Montiel, A.; González-Muñiz, R. Transient Potential Receptor Melastatin 8 (TRPM8) Channel Modulation: Cool Entryway for Treating Pain and Cancer. **J. Med. Chem. 2016,** 59, 1006-10029. D1

10. Bertamino A, Ostacolo C, Ambrosino P, Musella S, Di Sarno V, Ciaglia, T, Soldovieri MV, Iraci N, Fernández Carvajal A, De la Torre R, Ferrer-Montiel A, González-Muñiz R, Novellino E, Taglialatela M, Campiglia P, Gómez-Monterrey I. Tryptamine-based derivatives as Transient Receptor Potential Melastatin type-8 (TRPM8) channel modulators. **J. Med. Chem. 2016**, 59, 2179-2191. D1

Book Chapters:

-Fernández–Carvajal, A.; Fernandez-Ballester, G.; González-Muñiz, R.; Ferrer-Montiel, A. Pharmacology of TRP Channels. **TRP Channels in Sensory Transduction** (Springer, NY). Madrid, R., Bacigalupo, J., Eds. **2015**, pp 41-71. (ISBN 978-3-319-18705-1)

-Martín-Torres, I.; González-Muñiz, R. β-Lactams through single bond ring closing: methods, transformations and bioactivity. **Beta-Lactams: Novel Synthetic Pathways and Applications** (Springer-Nature). Banik, B., Ed. **2017**, pp219-252 (ISBN 978-3-319-55621-5)
-Pérez Gordillo, F.L.; Pérez de Vega, M.J.; Gerona-Navarro, G.; Rodríguez, Y.; Álvarez de la Rosa, D.; González Muñiz, R.; Martín-Martínez, M. Advances in the development of non-steroidal Mineralocorticoid-receptor antagonists. In **Aldosterone-Mineralocorticoid Receptor: Cell Biology to Translational Medicine** (Intech). Jaisser, F., Harvey, B., Eds. **2019** (ISBN: 978-1-83962-199-4). DOI: 10.5772/intechopen.88417.

C.2. Research projects and grants (selection of last 10 years)

1. "Targeting **coronavirus proteases** for the identification of new antivirals: structure-guided bimodal approaches. Financing entity: CSIC (PIE-COVID-153, PIE202080E221). Participating entities: Instituto de Química Médica and Centro Nacional de Biotecnología. **2020-2021**. Amount: 105.000 €. PIs: Dras. **Mª Rosario González Muñiz/ Marta Gutiérrez Rodríguez**.

2. "A pre-clinical human nociceptive in vitro model for investigating sexual dimorphism in chronic migraine and screening drug candidates". MICIU (RTI2018-097189-B-C22). Instituto de Química Médica. **2019-2021**. 284.350 €. PI: Dr. **Mª Rosario González Muñiz /Mercedes Martín Martínez**.

3.Preclinical development of TRPM8 channel antagonists for the treatment of antitumor chemotherapy-associated allodynia. Comunidad de Madrid (IND2017/BMD-7673). Instituto de Química Médica/Alodia Farmacéutica SL. **2018-2021**. 69.180€. PI: **Dr. Mª Rosario González Muñiz.**

4. Algesic sensitization of NOciceptors in CHRONIC PAIN: mechanisms and pharmacological intervention. MINECO (SAF-2015-66275-C2-2-R). Instituto de Química Médica. **2016-2018**. 152.000€ PI: **Dr. Mª Rosario González Muñiz.**

5. Spanish Ion Channel Initiative (SICI). MINECO (BFU2015-70067-REDC). Particpants:IQM and other 25 groups from different organisms. Coordinator: Antonio Ferrer-Montiel (UMH). **2017-2018**. 51.500 € (meetings only) PI of IQM group: **Dr. Mª Rosario González Muñiz.**

6. Aldosterone and Mineralocorticoid Receptor. EU, COST ACTION (BM1301**)**. Participants: 37 groups from 15 countries. **2014-2018**. 400.000 € (for meetings and training courses). PI IQM group: **Dr. Mª Rosario González Muñiz** (Prof. Frederic Jaisser, France, Coordinator).

7. Mechanisms and pharmacological modulation of inflammatory niciceptor sensitization. MINECO (BFU2012-39092-C02-02**)**. Instituto de Química Médica. 2013-2015. 128.700 € PI: **Dr. Mª Rosario González Muñiz**

8. *The Spanish Ion Channel Initiative* (SICI). MICINN (CONSOLIDER-INGENIO 2010, CSD2008_00005). Participants: 26 groups of 15 Institutions. **2009-2014**. 211.000 € (from a total of 6.000.000 € for 26 groups). PI IQM-CSIC: **Dr. Mª Rosario González Muñiz** (Coordinator, Prof. A. Ferrer-Montiel, UMH)

C.3. Contracts

-Givaudan Schweitz AG (Zurich, Swithzerland). Preparation of TRPM8 agonists as cooling compounds (2017-2018, 18 moths, 58.800€).
-Patent WO 2017005950 licensed to Alodia Farmacéutica SL for the preclinical development of TRPM8 antagonists for chemotherapy-induced allodynia.

C.4. Patents (last 10 years)

1. R. González-Muñiz, Mª Jesús Pérez de Vega, M. Miguel Castro, S. Moreno Fernández, B. Balsera *Compounds with antioxidant activity and uses thereof.* P201630362 (PCT16411116B, (**WO 2017168024** A1 20171005.) Priority: 28-3-2017. Owner: CSIC.

2. A. Ferrer Montiel, A. Fernández-Carvajal, R. de la Torre, R. González-Muñiz, M. J. Pérez de Vega, M. A. Bonache. *Heterocyclic compounds as TRPM8 antagonists and uses thereof*. **WO 2017005950**. Priority: 20/09/2016. Owners: UMH-CSIC. Licensed to ALODIA FARMACÉUTICA SL.

3. R. González-Muñiz, M. Miguel Castro, Silvia Moreno Fernández, M. A. Bonache. *Triazolyl polyphenols with antioxidant activity and uses thereof.* P201530960. Priority: 08-10-2015 Owner: CSIC.

4. A. Ferrer Montiel, A. Fernández-Carvajal, R. de la Torre, R. González-Muñiz, M. J. Pérez de Vega, M. A. Bonache. *Heterocyclic compounds as TRPM8 antagonists and uses thereof*. **WO 2017005950**. Priority: 03/07/2015. Owners: UMH-CSIC.

5. M. Criado, J. Mulet, S. Sala, F. Sala, A. Fernández-Carvajal, R. González-Muñiz, M. J. Pérez de Vega, B. Balsera, R. Borges. *Modulator of the α7nicotinic acetylcholine receptor and uses thereof.* P201331444. Priority: 2/10/2013. Owners: UMH-CSIC-ULL

6. A. Ferrer Montiel, A. Fernández-Carvajal, R. de la Torre, M. A. Bonache, B. Balsera, M. J. Pérez de Vega, M. Martín-Martínez, R. González-Muñiz. *Peptides as blockers of thermoreceptors and uses thereof*. P201331424. Priority: 30/09/2013. Owners: UMH-CSIC

C.5. Personnel Formation/Training (last 10 years)

PhD Thesis: Mª Isabel García Aranda, UCM, 2011. Diego Núñez Villanueva, UCM, 2013. Beatriz Balsera Paredes, UCM, 2015. Cristina Martín Escura (UAH, 2021), Carolina Izquierdo García (UAM, in progress)

Masters:

Inmaculada Martín Torres, UCM, 2016; Cristina Sánchez-Cid Muñoz, UCM, 2017; Cristina Martín Escura, UAH, 2017; Cristina Pérez Fernández, UCM, 2018. Hristo Anatoliev, 2020

Postdoctorals:

Mª Angeles Bonache de Marcos, 2009-2015. Susana Herrero Santos, 2015. Sonia de Castro de la Osa 2016. Eduardo Palao Utiel 2017-2018. Alberto Ponce, 2018-2019 . Gonzalo Durán Sampredro, 2018. Sergi Algar, 2020-2021.

C.6. Teaching activities

-**Honorary Professor**: UAM, 2008-2013. Basic aspects of medicinal chemistry. Subject: Organic biologic chemistry (20h/year). Máster interuniversitario en química orgánica.

-**Coordinator and teacher** (4h/year) of the Medicinal Chemistry specialization course (CSIC). 2008-2015.

-**Coordinator of the Citius course**: Strategies for the search of new drugs, UAM. 2008-2010, presential. 2012-2015 Online.

C.7. R&D management

-**Deputy Director:** INSTITUTO DE QUÍMICA MÉDICA (October 2005-May 2011)

-**Expert committees**: Ramón y Cajal Programme (2006-2009); Ministry, Chemistry Programe (2007). FPU Fellowship Program (2009, 2012, 2013). Marie-Curie UE/ Parc Cientific de Barcelona (PCB) Program (2012). Juan de la Cierva Program (2016). Ministry, Biomedicine Programe (2016). Ministry, Comprueba CTQ (2019). Ministry, Biomedicina, DPT 2020.

C.8. Conferences (more relevant last 10 years)

1. Azepane-derived quaternary amino acids: synthesis and ability to induce 3_{10} helical structures.International peptide Chemistry Conference. 5-11-**2012**. Xcaret (México).
2. Amino Acid Derived beta-Lactams: Synthesis, Biological Activity and Beyond. XVII SEQT Meeting. Advances in Drug Discovery: Successes, Trends and Future Challenges. 3-10-**2013**. Madrid
3. Analysis of Small-Molecule Binding to Purified Proteins by Surface Plasmon Resonance (SPR). Within the COST Action, ADMIRE BM1301. International Training School. Mineralocorticoid Receptor Cell Biology and Pharmacology. ULL (Tenerife, 9-02-**2015**)
4. Modulation of TRPM8 channels. Givaudan, Zurich, 8-3-2017.
5. Amino acid-derived β-lactams as a new chemotype of TRPM8 antagonists. Italian-Spanish-Portuguese Joint Meeting in Medicinal Chemistry (MedChemSicily2018). 19-7-**2018**.
6. R. González-Muñiz, et al. β–Lactam TRPM8 antagonists prevent chemotherapy-induced cold allodynia. VII Reunión de la Red Española de Canales Iónicos. Cáceres. 17-05-**2019**.

C9. Societies

1. **Spanish Representative** at the Council of the European Peptide Society (May 2108-).
2. **Secretary of Council** of the Spanish Society of Therapeutic Chemistry (2003-2007).

C10. Editor activities

1. Guest Editor: Special issue in Current Topics in Medicinal Chemistry. Emerging Therapeutic Opportunities by Targeting Protein-Protein Interactions", V 7, nº 1, 2007. (7 reviews)
2. Guest Editor: Special issue in Archives of Biochemistry and Biophysics. Peptides in Biology and Biomedicine, 2019. (14 reviews, co-edited with Dr. MA Jiménez).