CV Date	15/03/2024

Part A. PERSONAL INFORMATION

First Name *	Rafael		
Family Name *	Gonzalez Cano		
Sex *	Male	Date of Birth *	14/03/1983
ID number Social Security, Passport *		Phone Number *	
URL Web			
Email Address	rgcano@ugr.es		
Researcher's identification number	Open Researcher and Contributor ID (ORCID) *	0000-0002-9657-4521	
	Researcher ID	B-2573-2018	
	Scopus Author ID		

* Mandatory

A.1. Current position

Job Title	Associate Proffesor		
Starting date	2022		
Institution	University of Granada		
Department / Centre			
Country	Spain	Phone Number	
Keywords			

A.2. Previous positions

Period	Job Title / Name of Employer / Country
2019 - 2022	Posdoctoral Researcher / Project P20_00132
2017 - 2019	Research Fellow / Harvard medical school
2016 - 2016	Postdoctoral Researcher / Project SAF2013-47481-P
2015 - 2016	Contrato Puente doctores Universidad de Granada / Universidad de Granada
2010 - 2014	Beca Formación Profesorado Universitario (FPU) / Ministerio de Educación
2009 - 2010	Research Fellowship / FUNDACION EMPRESA UNIVERSIDAD DE GRANADA
2007 - 2008	beca de colaboración / MINISTERIO DE EDUCACION Y CIENCIA

A.3. Education

Degree/Master/PhD	University / Country	Year
Ph.D in Neuroscience	University of Granada	2014
Msc in Neurosciences and pain	University of Granada	2010
BSc in Biology	University of Granada	2008

A.4. General quality indicators of scientific production
Number of journal publications 30
Number of conference publications 42
Number of stays at other research centers / time (months) 3/31
Number of projects led 2
Number of theses been supervised 2
Number of papers as corresponding author 4
Number of papers from international collaborations 18

Part B. CV SUMMARY

Since my undergraduate years, I've been deeply passionate about research. This passion guided me to join the "Neuropharmacology of Pain" research group, under the mentorship of Professor Baeyens, located within the Department of Pharmacology at the University of Granada's Faculty of Medicine. In my final year of undergraduate studies, I was granted a “collaboration scholarship” from the Spanish Ministry of Education. This scholarship gave me the chance to participate in several research projects funded by the Spanish Government and research contracts granted by Laboratorios Esteve, a leading pharmaceutical company in Spain. Following the completion of my Master's Degree in Neurosciences and Pain, I started my Ph.D. studies, supported by the University Teaching Staff Training Program (FPU scholarship: 2010-2014). I aimed my doctoral research to study the effects of novel pharmacological targets in animal models of pain, with the ultimate goal of identifying potential drug candidates that could alleviate various types of pain. During my Ph.D., I had the exceptional opportunity to make two brief stays in internationally renowned research groups. The first was with Dr. Fernando Cerveró's (the former President of the International Association for the Study of Pain) team at McGill University in Montreal, where I expanded my expertise in animal models of visceral pain. The second was with Dr. Niels Eijkelkamp's group at Utrecht University, where I worked on animal models of neuropathic pain. Both experiences were intellectually enriching and resulted in publications in prestigious scientific journals. In addition, I collaborated with Prof. Wood's group in London to investigate the role of voltage-sensitive sodium channels in visceral pain. This fruitful collaboration also resulted in a publication. I successfully defended my Ph.D. thesis, titled "Role of Sigma-1 receptors in visceral pain", earning the highest honors of Summa Cum Laude and Doctor Europeus qualifications. The results of my doctoral thesis were published in Anesthesiology (a leading journal of pain research). Upon concluding my Ph.D., I was awarded the " UGR postdoctoral contract-bridge scholarship", which facilitated my continued research on the mechanism of action of sigma-1 receptors during inflammation and sensitization in animal models. Subsequently, I received a fellowship from the Martin Escudero Foundation for a two-year postdoctoral stay at Dr. Woolf's laboratory at Boston Children's Hospital, Harvard Medical School.

It was during my postdoctoral fellowship that I specialized in developing innovative methods for evaluating animal behavior, with a particular emphasis on the use of artificial intelligence tools. This line of work resulted in two publications, one for each developed device, and a patent (US20210059220A1). Upon returning to the University of Granada, I continued to focus on the application of artificial intelligence tools for evaluating the efficacy of analgesic drugs. I was granted a research project for young researchers, and received invitations to present my findings at national conferences, and I am currently in the process of patenting a novel structure to use artificial vision to detect complex behaviors in rodents. Throughout my career, I have authored 30 articles in international journals, all of which have been published in Q1 journals. Among these, 11 are in the first decile journal and 7 are in high-impact journals (>8), including Cell, PNAS, Plos Biology, Cell Report, and Neurosci Biobehav Rev. Nine of my articles have been cited more frequently than 90% of articles published in the same year and field, according to the Journal Citation Reports (JCR), accumulating a total of 724 citations for my work. My research findings have made a significant impact, both in the scientific community and in the media, and have been recognized with multiple awards. I have actively collaborated with international groups, either stemming from my international stays or from collaborations initiated from my home institution. In agreement with this, 45% of my articles are made in collaboration with foreign groups. At this time, I'm privileged to be directing the doctoral studies of two commendable students, Ms. Mirian Santos and Ms. Makeya Hasoon. Ms. Santos is anticipated to present her thesis defense in 2025 and Ms. Hasoon is expected to defend her thesis in 2024.

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Publications

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

1 Scientific paper. Ozdemir Y; Nakamoto K; Boivin B; Bullock D; Andrews NA; (6/7) Gonzalez-Cano R (AC); Costigan M. 2024. Quantification of stimulus-evoked tactile allodynia in free moving mice by the chainmail sensitivity test.Frontiers in pharmacology.

2 Scientific paper. Blicker L; (2/8) Gonzalez-Cano R; Laurini E; Nieto FR; Schmidt J; Schepmann D; Pricl S; Wunsch B. 2023. Conformationally Restricted sigma(1) Receptor Antagonists from (-)-Isopulegol.Journal of medicinal chemistry.

3 Scientific paper. Dichiara M; Ambrosio FA; Lee SM; et al; Amata E; (13/18) Gonzalez-Cano R. 2023. Discovery of AD258 as a Sigma Receptor Ligand with Potent Antiallodynic Activity.Journal of medicinal chemistry.

4 Scientific paper. Vezza T; Molina-Tijeras JA; (3/7) Gonzalez-Cano R (AC); Rodriguez-Nogales A; Garcia F; Galvez J; Cobos EJ. 2023. Minocycline Prevents the Development of Key Features of Inflammation and Pain in DSS-induced Colitis in Mice.The journal of pain.

5 Scientific paper. Dichiara M; Ambrosio FA; Barbaraci C; et al; Amata E; (4/11) Gonzalez-Cano R. 2023. Synthesis, Computational Insights, and Evaluation of Novel Sigma Receptors Ligands.ACS chemical neuroscience.

6 Scientific paper. Zhang Z; Roberson DP; Kotoda M; et al; Woolf CJ; (6/19) Gonzalez-Cano R. 2022. Automated preclinical detection of mechanical pain hypersensitivity and analgesia.Pain.

7 Scientific paper. Dichiara M; Artacho-Cordon A; Turnaturi R; et al; Amata E; (5/12) Gonzalez-Cano R. 2022. Dual Sigma-1 receptor antagonists and hydrogen sulfide-releasing compounds for pain treatment: Design, synthesis, and pharmacological evaluation.European journal of medicinal chemistry.

8 Scientific paper. Bechthold E; Schreiber JA; Ritter N; et al; Wunsch B; (7/10) Gonzalez-Cano R. 2022. Synthesis of tropane-based sigma(1) receptor antagonists with antiallodynic activity.European journal of medicinal chemistry.

9 Scientific paper. Codony S; Entrena JM; Calvo-Tusell C; et al; Vazquez S; (5/23) Gonzalez-Cano R. 2022. Synthesis, In Vitro Profiling, and In Vivo Evaluation of Benzohomoadamantane-Based Ureas for Visceral Pain: A New Indication for Soluble Epoxide Hydrolase Inhibitors.Journal of medicinal chemistry.

10 Scientific paper. (1/9) González-Cano, R (AC); Montilla-García, A; Perazzoli, G; et al; Cobos, EJ. 2021. Intracolonic Mustard Oil Induces Visceral Pain in Mice by TRPA1-Dependent and -Independent Mechanisms: Role of Tissue Injury and P2X Receptors.Frontiers in pharmacology.

11 Scientific paper. Fattori V; Franklin NS; (3/10) Gonzalez-Cano R; et al; Rogers MS. 2020. Nonsurgical mouse model of endometriosis-associated pain that responds to clinically active drugs.PAIN.

12 Scientific paper. Ruiz-Cantero, MC; (2/7) González-Cano, R; Tejada, MÁ; Santos-Caballero, M; Perazzoli, G; Nieto, FR; Cobos, EJ. 2020. Sigma-1 receptor: a drug target for the modulation of neuroimmune and neuroglial interactions during chronic pain.Pharmacol Res.

13 Scientific paper. Chen, L; Wimalasena, NK; Shim, J; et al; Waxman, SG; (6/12) Gonzalez-Cano, R. 2020. Two independent mouse lines carrying the Nav1.7-I228M gain-of-function variant display DRG neuron hyperexcitability but a minimal pain phenotype. Pain.

14 Scientific paper. (1/10) González-Cano, R; Artacho-Cordón, A; Romero, L; et al; Baeyens, JM. 2020. Urinary bladder sigma-1 receptors: A new target for cystitis treatment. Pharmacol Res.

15 Scientific paper. Davies, AJ; Kim, HW; (3/22) Gonzalez-Cano, R; et al; Oh, SB. 2019. Natural Killer Cells Trigger Autoimmune Degeneration of Intact Sensory Afferents Following Nerve Injury. Cell. 176-4, pp.716-728. ISSN 0092-8674.

16 Scientific paper. Willemen, H; Kavelaars, A; Prado, J; et al; Eijkelkamp, N; (8/16) Gonzalez-Cano, R. 2018. Identification of FAM173B as a protein methyltransferase promoting chronic pain. Plos Biology. 16. ISSN 15449173.

17 Scientific paper. Cobos, EJ; Nickerson, C; Gao, F; et al; Costigan, M; (6/22) González-Cano, R. 2018. Mechanistic differences in neuropathic pain modalities revealed by correlating behavior with global expression profiling. Cell reports. ISSN 22111247.

18 Scientific paper. Montilla-García A; Perazzoli G; Tejada MA; (4/7) González-Cano R; Sánchez-Fernández C; Cobos EJ; Baeyens JM. 2018. Modality-specific peripheral antinociceptive effects of μ-opioid agonists on heat and mechanical stimuli: contribution of sigma-1 receptors. Neuropharmacology. ISSN 0028-3908.

19 Scientific paper. Tejada, MA; Montilla-García, A; (3/7) González-Cano, R; Bravo-Caparrós, I; Ruiz-Cantero, MC; Nieto, FR; Cobos, EJ. 2018. Targeting immune-driven opioid analgesia by sigma-1 receptors: Opening the door to novel perspectives for the analgesic use of sigma-1 antagonists. Pharmacological research. ISSN 10436618.

20 Scientific paper. (1/6) Gonzalez-Cano, R (AC); Boivin, B; Bullock, D; Cornelisen, L; Andrews, N; Costigan, M. 2018. Up-Down Reader: An Open Source Program for Efficiently Processing 50% Von Frey Thresholds. Frontiers in Pharmacology. 9, pp.433. ISSN 16639812.

21 Scientific paper. (1/7) González-Cano, R; Tejada-Giráldez, MÁ; Artacho-cordón, A; Nieto, FR; Entrena-Fernández, JM; Wood, JN; Cendán-Martínez, CM. 2017. Effects of Tetrodotoxin in Mouse Models of Visceral Pain. Marine Drugs. 15-6, pp.E188. ISSN 16603397.

22 Scientific paper. Pitcher, MH; (2/8) González-Cano, R; Vincent, K; Lehmann, M; Cobos, EJ; Coderre, TJ; Baeyens, JM; Cervero, F. 2017. Mild Social Stress in Mice Produces Opioid-Mediated Analgesia in Visceral but Not Somatic Pain States.The Journal of Pain. 18-6, pp.716-725. ISSN 15265900.

23 Scientific paper. Tejada, MA; Montilla García, A; Cronin, SJ; et al; Cobos, EJ; (6/11) González Cano, R. 2017. Sigma-1 receptors control immune-driven peripheral opioid analgesia during inflammation in mice.Proceedings of the National Academy of Sciences of the United States of America. 114-31, pp.8396-8401. ISSN 10916490.

24 Scientific paper. Hockley, JRF; (2/17) González-Cano, R; Mcmurray, S; et al; Mcmurray, G. 2017. Visceral and somatic pain modalities reveal NaV 1.7-independent visceral nociceptive pathways. The Journal of Physiology. 595-8, pp.2661-2679. ISSN 14697793.

25 Review. (1/6) Gonzalez-Cano R; Ruiz-Cantero MC; Santos-Caballero M; Gomez-Navas C; Tejada MA; Nieto FR. 2021. Tetrodotoxin, a Potential Drug for Neuropathic and Cancer Pain Relief?. Toxins.

26 Review. (1/7) González-Cano, R; Montilla-García, Á; Ruiz-Cantero, MC; Bravo-Caparrós, I; Tejada, MÁ; Nieto, FR; Cobos, EJ. 2020. The search for translational pain outcomes to refine analgesic development: Where did we come from and where are we going?. Neurosci Biobehav Rev.

27 Review. Bullock, D; Jesuthasan, A; (3/4) González-Cano, R; Costigan, M. 2019. Reading and writing: the evolution of molecular pain genetics.Pain. 160-10, pp.2177-2185.

C.2. Conferences and meetings

1 González-Cano R. Artificial Intelligence for Assessing Pain in Experimental Animals. Curso de Verano: Deconstruyendo el dolor y todo lo contrario. Universidad Rey Juan Carlos. 2022. Participatory - invited/keynote talk. Conference.

2 González-Cano R. Artificial Intelligence Applied to Pain. XVIII Congress of the Spanish Pain Society. 2022. Participatory - invited/keynote talk.

3 González-Cano R. Can Different Aspects of Postoperative Pain be Evaluated in Mice? Using Artificial Intelligence Tools to Assess Pain in Experimental Animals. Jornada Ciencias básicas GT SED 21. 2021. Participatory - invited/keynote talk. Seminar.

4 González-Cano R. How Do Machines Interrogate Mice?. XV Congress of the SECAL. Spanish Society for Laboratory Animal Science. 2019. Participatory - invited/keynote talk. Conference.

5 Gonzalez-Cano, R; Boivin, B; Bullock, D; Cornelisen, L; Andrews, N; Costigan, M. Up-Down Reader: An Open Source Program for Efficiently Processing 50% Von Frey Thresholds. 17th World Congress on Pain (IASP). 2018. United States of America.

6 Bravo-Caparrós, I; Nieto, FR; Perazzoli, G; González-Cano, R; Baeyens-Cabrera, JM; Cobos, EJ. Role of Sigma-1 receptor in the spared nerve injury model of neuropathic pain. 6th International congress on Neuropathic Pain. 2017. Sweden. Conference.

C.3. Research projects and contracts

1 Project. C-CTS-226-UGR23, Evaluation of Therapeutic Potential of Sigma-1 Receptors in Endometriosis Using Computerized Behavioral Measurements. M Tejada. 01/01/2024-31/12/2026. 12.000 €. Principal investigator.

2 Project. PID2021-123058NA-I00, Inhibición del receptor sigma-1 (σ1) y de la enzima epóxido hidrolasa soluble: una nueva estrategia para el tratamiento del dolor en la artritis reumatoide. CENTRO DE ACUSTICA APLICADA Y EVALUACION NO DESTRUCTIVA. F Nieto. 2022-2025. 96.437 €. Team member.

3 Project. PID2019-108691RB-I00, Inhibition of the sigma-1 receptor: a strategy for the treatment of postoperative pain.. Baeyens JM. 2021-2024. 157.300 €. Team member.

4 Project. PPJIA2022-42, Searching for New Measures of Pain in Animals to Refine the Development of Analgesics. González-Cano R. 01/01/2023-31/12/2023. 1.500 €. Principal investigator.

5 Project. P20_00132, Analgesia multimodal en la artritis reumatoide: la inhibición del receptor sigma-1 para incrementar el rango terapéutico de los AINEs. Proyectos I+D+i Junta de Andalucia 2020. EJ Cobos. 2021-2023. 142.367 €.

6 Project. Modulación del dolor por los receptores sigma-1 periféricos [Pain modulation by peripheral sigma-1 receptors]. Ministerio de Economía y Competitividad (MINECO). 08/02/2019-29/12/2020. 133.100 €. Team member.

7 Project. SAF2016-80540-R, Modulation of pain by peripheral sigma-1 receptors. Cobos EJ. 2019-2020. 133.100 €. Team member.

8 Project. NIH/NINDS R35NS105076, Unravelling mechanisms and novel therapeutic targets for peripheral neuropathy and neuropathic pain.. Woolf CJ. 2017-2020. 750.000 €. Team member.

9 Project. NIH/NINDS R01NS039518, R37NS039518, Neural Plasticity and Inflammatory Pain.. Institute of Health (NIH). Woolf C. 01/05/2001-30/11/2018. 592.331 €. Team member.

10 Project. NIH/NINDS R01NS038253, Altered Sensibility Following Peripheral Nerve Damage. Institute of Health (NIH). Woolf CJ. 05/12/1998-30/11/2018. 508.463 €. Team member.

11 Project. NIH R01NS074430, The mechanisms of action of T-lymphocytes in neuropathic pain. National Institute of Health (NIH).. Costigan M. 01/07/2012-30/04/2017. 394.317 €. Team member.

12 Contract. Evaluation of analgesia in murine models of pain. Cobos EJ. From 2021. 12.100 €.

13 Contract. Nueva molécula en el campo de la analgésica (Multimodal 1): Desarrollo clínico Fase 1 [New molecule in the analgesic field (Multimodal 1): Phase 1 clinical development] CENTRO DE ACUSTICA APLICADA Y EVALUACION NO DESTRUCTIVA. 01/07/2018-01/07/2019. 19.360 €.

14 Contract. New molecule in the field of analgesics (Multimodal 1): Phase 1 Clinical Development Baeyens JM. From 2018. 19.360 €.

C.4. Activities of technology / knowledge transfer and results exploitation

Costigan, M; Gonzalez-Cano, R; Ozdemir, Y. US20210059220A1. Test environment for the characterization of neuropathic pain. United States of America. 26/08/2020.

C.5. Stays in public or private R&D centres

1 Boston Children´s Hospital. Harvard Medical School. United States of America. Boston. 2017-2019. 2 years. Post-doctoral.

2 NIDOD. Utrecht University. Holland. Utrecht. 2013-2013. 3 months. Doctorate.

3 Anaesthesia Research Unit.. Canada. Montreal. 2011-2011. 4 months. Doctorate.