CURRICULUM VITAE (CVA) – 4 pages

CV date	09/07/2024

Part A. PERSONAL INFORMATION

First name	Luis Carlos		
Family name	López García		
Gender	Male	Birth date (dd/mm/yyyy)	08/08/1979
ID number	45301479N		
e-mail	luisca@ugr.es	URL Web: https://wpd.ugr.es/~luisca/	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-3355-0298		

A.1. Current position

Position	Full Professor (Catedrático) – Chair, Department of Physiology		
Initial date	04/02/2022		
Institution	Universidad de Granada		
Department/Center	Physiology	Centro de Investigación Biomédica	
Country	Spain	Phone number	+34958241000 ex 20197
Key words	Mitochondria, Coenzyme Q10, mitochondrial diseases, metabolism		

A.2. Previous positions (research activity interruptions, see call)

Period	Position/Institution/Country/Interruption cause
2018-2022	Profesor Titular / Universidad de Granada / Spain
2017-2018	Profesor Contratado Doctor / Universidad de Granada / Spain
2012-2017	Ramón y Cajal Researcher / Universidad de Granada / Spain
2009-2011	Postdoctoral Researcher / Universidad de Granada / Spain
2006-2009	Postdoctoral Researcher / Columbia University / USA
2002-2006	PhD student / University Hospital San Cecilio / Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Biology	University of Granada	2005
Bachelor in Biology	University of Granada	2002

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

As a graduate student, I studied the antioxidant, antinitrosative and antiinflamatory properties of melatonin in different conditions like sepsis, PD and aging. This work was extensively published and the results are being used for different **commercial and medical applications**. After I received my PhD, I moved to Columbia University (USA) to work in the laboratories of Dr. Hirano and Dr. DiMauro. In this period, I was a pioneer in identifying the molecular causes of CoQ_{10} deficiency. In fact, my article published in *Am J Hum Genet* on 2006 is the **most cited article** in the field of human CoQ_{10} deficiencies. Together with Dr. Quinzii, I was also a **pioneer** in performing *in vitro* studies to identify key pathomechanims of this syndrome, which were published in three articles and have been very well recognized for other scientists (among the most cited articles in the field). During those 3 years, I was also involved in the study of the mitochondrial deoxynucleoside salvage pathways through the generation and characterization of the double *Tymp/Upp1* knockout and the *Tk2* knockin mouse models. These were used to **demonstrate for the first time** that unbalance of nucleosides and nucleotides pools produces mtDNA instability *in vivo*, leading to mitochondrial diseases. These mouse models are used for therapeutic studies, and later on I collaborated in proposing a **new treatment** for Tk2 deficiency, which was published in *Embo Mol Med* and it is being used in patients (both in Europe and USA, through Zogenix) as a compassionate use with very promising results.

As a group leader since 2012 **("Ramón y Cajal" researcher;** 7,642 cites; H-index = 54), my group has generated and characterized the **first two mouse models** of mitochondrial encephalopathy and mitochondrial myopathy due to CoQ deficiency, discovering the **function of COQ9** (*PNAS*; in collaboration with Dr. Pagliarini) and identifying **new pathomechanisms**, such as the supercomplexes instability in symptomatic tissue (*Hum Mol Genet*; Senior Author [CA]), the indirect correlation in the

efficacy of NMD and the severity of CoQ deficiency (*Embo Mol Med and Sci Rep*; CA) and the disruption in the sulfide oxidation pathway (*Embo Mol Med*; CA). We have also demonstrated the cause of the failure of CoQ_{10} supplementation (*BBA*; CA) and some novel mechanisms of action (*Hum Mol Genet*; [CA]), and we have evaluated very **promising alternative treatments** for this syndrome (*Embo Mol Med, eBiomedicine, Redox Biol* and *Cell Reports*; CA). One of these treatments is being used in one pediatric patient in Spain as compassionate use. Also, we have patented a pharmacological application for the treatment of overweight and obesity and we are currently working to transfer this technology to the society. I have/am **mentored/mentoring**: 1) two postdocs, who got Assistant Professor positions at UGR and three other postdocs currently working in my lab; 2) five **PhD students**, which have now **competitive postdoctoral positions** [Laura García Corzo, who got a "Juan de la Cierva" postdoctoral fellow - Helena Mira's lab; Marta Luna Sánchez, who got a "Ramón Areces" postdoctoral fellowship – Carlo Viscomi's lab – and a Marie Curie fellowship - Quintana's lab; Huayqui Volt Valdivia, who created Dr. Volt company; Eliana Barriocanal Casado, who got a "Martín Escudero" postdoctoral fellowship - Quinzii's lab; and Agustín Hidalgo Gutiérrez, who got a "Martín Escudero" postdoctoral fellowship" and a "Marie Curie Global Fellowship" - Hirano's lab; Pilar González-García, who continues as postdoc in my lab] and three other PhD students currently working in my lab; 3) eight **master students** and two others currently studying in my lab; and 4) six international researchers who made research stays in my lab. I have established **collaborations** with reputed scientists around the world and with the industry. I have two patents, and I have obtained international (FP7, NIH and MDA) and national **grants as a PI** with an overall budget of **more than 3 million € in the last 10 years**. I am currently the chair of the Department of Physiology, scientific director of UNETE/AD®TLUT (https://wpd.ugr.es/~unete-uex/) and member of CIBERfes (https://www.ciberfes.es/). I have been awarded with three of the most prestigious individual scientific programs, i.e., **Marie Curie, Ramón y Cajal and Fulbright**. I have extensive expertise in article's reviews and evaluation of project proposals, including my expertise as a **H2020 expert**.

Part C. RELEVANT MERITS

C.1. Publications

1. Corral-Sarasa J, Martínez-Gálvez JM, González-García P, Wendling O, Jiménez-Sánchez L, López-Herrador S, Quinzii CM, Díaz-Casado ME, and López LC (2024). 4-Hydroxybenzoic Acid Rescues the Multisystemic Disease and Perinatal Lethality in a Mouse Model of Mitochondrial Disease. *Cell Reports*. https://doi.org/10.1016/j.celrep.2024.114148. (**corresponding author**). → 1 cite. IF: 8.8; 32/191 (Q1), Cell Biology.

2. González-García P, Díaz-Casado ME, Hidalgo-Gutiérrez A, Jiménez-Sánchez L, Bakkali M, Barriocanal-Casado E, Escames G, Chiozzi RZ, Völlmy F, Zaal EA, Berkers CR, Heck AJR, López LC (2022). (2022). The Q-junction and the inflammatory response are critical pathological and therapeutic factors in CoQ deficiency. *Redox Biol. 55:102403.* (**corresponding author**). → 4 cites. IF: 10.787; 27/296 (D1), Biochemistry & Molecular Biology.

3. González-García P, Hidalgo-Gutiérrez A, Mascaraque C, Barriocanal-Casado E, Bakkali M, Ziosi M, Abdihankyzy UB, Sánchez-Hernández S, Escames G, Prokisch H, Martín F, Quinzii CM, **López LC** (2020). Coenzyme Q10 modulates sulfide metabolism and links the mitochondrial respiratory chain to pathways associated to one carbon metabolism. *Hum Mol Genet* 29(19):3296-3311 (**corresponding author**). → 16 cites. IF: 6.150; 23/176 (Q1), Genetics & Heredity.

4. Barriocanal-Casado E, Hidalgo-Gutiérrez A, Raimundo N, Gonzalez-García P, Acuña-Castroviejo D, Escames G, **López LC** (2019). Rapamycin Administration Is Not a Valid Therapeutic Strategy for Every Case of Mitochondrial Disease. *EBiomedicine* 42: 511-523 (**corresponding author**). → 21 cites. IF: 5.736; 18/138 (Q1), Medicine, Research & Experimental.

5. Hidalgo-Gutiérrez A, Barriocanal-Casado E, Bakkali M, Díaz-Casado ME, Sánchez-Maldonado L, Romero M, Sayed RK, Prehn C, Escames G, Duarte J, Acuña-Castroviejo D, **López LC** (2019). β-RA reduces DMQ/CoQ ratio and rescues the encephalopathic phenotype in *Coq9*^{R239X} mice. *EMBO molecular medicine* 11: e9466 (**corresponding author**). → 26 cites. IF: 8.821; 9/138 (D1), Medicine, Research & Experimental.

6. Rodríguez-Hidalgo M, Luna-Sánchez M, Hidalgo-Gutiérrez A, Barriocanal-Casado E, Mascaraque C, Acuña-Castroviejo D, Rivera M, Escames G, **López LC** (2018). Reduction in the levels of CoQ biosynthetic proteins is related to an increase in lifespan without evidence of hepatic mitohormesis.

Sci Rep. 8(1): 14013 (**corresponding author**). → 6 cites. IF: 4.011; 15/69 (Q1), Multidisciplinary Sciences.

7. Luna-Sánchez M, Hildalgo-Gutiérrez A, Hildebrandt TM, Chaves-Serrano J, Barriocanal-Casado E, Santos-Fandila A, Romero M, Sayed RKA, Duarte J, Prokisch H, Schuelke M, Escames G, Acuña-Castroviejo D, **Lopez LC** (2017). CoQ Deficiency Causes Disruption of Mitochondrial Sulfide Oxidation, a new Pathomechanism Associated to this Syndrome. *EMBO molecular medicine* 9(1): 78-95 → 51 cites (**corresponding author**). IF: 10.293; 7/133 (D1), Medicine, Research & Experimental.

8. Luna-Sanchez M, Diaz-Casado E, Barca E, Tejada MA, Montilla-Garcia A, Cobos EJ, Escames G, Acuna-Castroviejo D, Quinzii CM, **López LC** (2015). The clinical heterogeneity of coenzyme Q10 deficiency results from genotypic differences in the Coq9 gene. *EMBO molecular medicine* 7(5): 670-87 → 65 cites (**corresponding author**). IF: 9.547; 7/124 (D1), Medicine, Research & Experimental.

9. Lohman DC, Forouhar F, Beebe ET, Stefely MS, Minogue CE, Ulbrich A, Stefely JA, Sukumar S, Luna-Sanchez M, Jochem A, Lew S, Seetharaman J, Xiao R, Wang H, Westphall MS, Wrobel RL, Everett JK, Mitchell JC, **López LC**, Coon JJ, Tong L, Pagliarini DJ (2014). Mitochondrial COQ9 is a lipid-binding protein that associates with COQ7 to enable coenzyme Q biosynthesis. *Proceedings of the National Academy of Sciences of the United States of America* 111: E4697-4705 → 98 cites (**international collaboration**). IF: 9.737; 4/56 (D1), Multidisciplinary Sciences.

10. Garcia-Corzo L, Luna-Sanchez M, Doerrier C, Ortiz F, Escames G, Acuna-Castroviejo D, **López LC** (2014). Ubiquinol-10 ameliorates mitochondrial encephalopathy associated with CoQ deficiency. *Biochimica et biophysica acta* 1842: 893-901 → 47 cites (**corresponding author**). IF: 4.882; 54/291 (Q1), Biochemistry & Molecular Biology.

C.2. Congress (only oral communications and invited presentations)

1. *International Workshop on Coenzyme Q10: from basics to clinics (2024)*. Cordoba, Spain. **Invited.**
2. *1st Annual MDA Insights in Research Investor Summit (2021). USA.* **Invited**
3. *41th Meeting of the SEBBM (2018).* Santander, Spain. **Invited.**
4. *The 9th Conference of the International CoQ10 Association (2018).* New York, USA. **Invited.**
5. *Biomedicum Helsinki Seminars (2018).* Helsinki, Finland. **Invited.**
6. *11th MiP conference (2015).* Prague, Check Republic.
7. *The 7th Conference of the International CoQ10 Association (2012).* Seville, Spain. **Invited.**
8. *Euromit 8 (2011).* Zaragoza, Spain.
9. *176th European Neuromuscular Disorders Workshop (2010).* Naarden, Netherland. **Invited.**
10. *51th Meeting of the Spanish Society of Geriatric and Gerontology (2009).* Bilbao, Spain. **Invited.**
11. *Euromit 7 (2008).* Stockholm, Sweden.
12. *Mitochondrial Symposium 2008.* NIH, Bethesda, Maryland, USA. **Awarded.**
13. *AAN 59th Meeting (2007).* Boston, USA. **Selected in the top 5 % of the meeting program.**

C.3. Research projects

1. Reference: QUAL21-002 - Title: Unidad de Excelencia para el Estudio de los Transtornos del Envejecimiento (UNETE)
   Agency: University of Granada
   PI: Luis Carlos López García, Universidad de Granada
   From: 01/01/2023 To: 31/12/2025
   Funds: 698.841,00 € - Role: **PI**

2. Reference PID2021-126788OB-100 - Title: Deciphering the Pathological and Therapeutic Mechanisms in Primary Coenzyme Q Deficiency
   Agency: MCI, Proyectos Generación del Conocimiento
   PI: Luis Carlos López García, Universidad de Granada
   From: 01/9/2022 To: 31/08/2026
   Funds: 211,750.00 € - Role: **PI**

3. Reference: P20_00134 - Title: Descifrando los mecanismos de acción de los derivados del ácido hidroxibenzoico en la mitocondria: implicaciones para el tratamiento de enfermedades raras y comunes (Mito-HBAs)

Agency: Junta de Andalucía, Proyectos de Excelencia 2020
PI: Luis Carlos López García, Universidad de Granada
From: 01/01/2021 To: 30/06/2023
Funds: 177,334.00 € - Role: **PI**

4. Reference: RTI2018-093503-B-I00 - Title: Tratamiento de las deficiencias en Coenzima Q: potencial terapeútico de los precursores biosintéticos e importancia de las interacciones endocrinas
Agency: MCIU, Retos Investigación: Proyectos I+D+i 2018
PI: Luis Carlos López García, Universidad de Granada
From: 01/1/2019 To: 30/06/2022
Funds: 193,600.00 € - Role: **PI**

5. Reference: MDA- 602322 - Title: New therapeutic molecules for the treatment of mitochondrial diseases
Agency: Muscular Dystrophy Association
PI: Luis Carlos López García, Universidad de Granada
From: 01/2/2019 To: 31/01/2023
Funds: 289,865.00 $ - Role: **PI**

6. Reference: SAF2015-65786-R - Title: Patogénesis y Tratamiento de la Deficiencia en Coenzima Q
Agency: MINECO, Retos Investigación: Proyectos I+D+i 2015
PI: Luis Carlos López García, Universidad de Granada
From: 01/1/2015 To: 31/12/2018
Funds: 181,500.00 € - Role: **PI**

7. Reference: P1 - Title: Targeting Nutrient-Sensing Signaling Pathways for the Treatment of Mitochondrial Diseases
Agency: Todos somos raros, todos somos únicos
PI: Luis Carlos López García, Universidad de Granada
From: 01/03/2015 To: 28/02/2017
Funds: 97,000.00 € - Role: **PI**

8. Reference: 1P01HD080642-01 - Title: Mitochondrial Encephalomyopathies: Approaches to Treatment
Agency: NIH / NICHD (USA)
PI: Salvatore Dimauro, Columbia University (NY, USA)
From: 30/09/2014 To: 31/05/2019
Funds: 106,000.00 $ to the subproject of the University of Granada - Role: subproject **PI**

9. Reference: SAF2013-47761-R - Title: Estudio preclínico para el tratamiento de la encefalopatía mitocondrial asociada a la deficiencia en Coenzima Q
Agency: MINECO, Retos Investigación: Proyectos I+D+i 2013
PI: Luis Carlos López García, Universidad de Granada
From: 01/01/2014 To: 31/12/2015
Funds: 102,850.00 € - Role: **PI**

C.4. Contracts, technological or transfer merits

1. Application number: P202430145. Date: 28/02/24. Compound to stimulate mito-metabolism.
2. Application number: WO/2022/123103. Date: 11/12/2020. Compound to reduce the white adipose tissue and to treat the overweight and obesity. National phases in Europe, USA, Mexico and Australia.
3. Application number: WO/2014/083227. Date: 26/11/2013. Anti-aging cream. This patent is being exploited in the product "Mel13" by the spin-off Pharmamel.
4. Contract "Altitud 1.080" - 4156, OTRI-UGR

C.5. Expert reviewer in research agencies

2016 – H2020 expert (EX2006C158950). Evaluation of the Calls Topics INFRAIA-01-2016-2017, INFRAIA-02-2017, INFRADEV-01-2017, INFRAIA-02-2017, INFRAIA-2018-1 and ERC-PoC-2019, ERC-PoC-2020, ERC-PoC-2022, ERC-PoC-2023 and ERC-PoC-2024.

2013 – Grant reviewer: Spanish Research Agency (ESN and DPT panels), ANEP (Spanish Agency of Evaluation), Research Council Finland, Research Agency of Slovak Republic, Diabetes UK, Ataxia UK Foundation (UK) and Welcome Trust (UK).