



### 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	31/05/2023
First name	Miguel		
Family name	López		
Gender (*)	Male		
e-mail <a href="mailto:m.lopez@usc.es">m.lopez@usc.es</a>		URL Web <a href="https://www.usc.es/cimus/es/investigacion/grupos-de-investigacion/neuroobesity">https://www.usc.es/cimus/es/investigacion/grupos-de-investigacion/neuroobesity</a>	
Open Researcher and Contributor ID (ORCID) (*)	<a href="https://orcid.org/0000-0002-7823-1648">orcid.org/0000-0002-7823-1648</a>		
Web of Science Researcher ID	<a href="https://orcid.org/0000-0002-7823-1648">ABF-4844-2021</a>		

(\*) Mandatory

#### A.1. Current position

Position	Associate Professor (Profesor Titular de Universidad; acreditado para Catedrático de Universidad)		
Initial date	10/03/2014		
Institution	Universidad de Santiago de Compostela (USC)		
Department/Center	Department of Physiology	CiMUS	
Country	Spain		
Key words	Hypothalamus; obesity; AMPK; metabolism; ER stress, endocrinology; molecular endocrinology: signalling pathways		

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

Period	Position/Institution/Country/Interruption cause
1997-2002	PhD Student (FPU Fellowship)/USC/Spain
2002-2006	Postdoctoral Fellow (Marie Curie Fellowship)/University of Cambridge/UK
2006-2007	Investigador Parga Pondal Contract/USC/Spain
2007-2012	Investigador Ramon y Cajal Contract/USC/Spain
2012-2014	Associate Professor (PCD)/USC/Spain

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Degree in Biology (Molecular Biology)	USC	1996
PhD in Biology	USC	2002

#### Part B. CV SUMMARY

- Dr. Miguel López received his PhD in Molecular Biology (2002) from the University of Santiago de Compostela (USC, Spain) and made his postdoctoral training (2002-2006) in the Department of Clinical Biochemistry in the University of Cambridge (UK). In 2006, he joined the Department of Physiology of USC as a researcher of the Parga Pondal Program, and after the Ramón y Cajal Program. Since 2006, he directs the NeurObesity Group. Currently, he is Associate Professor (Profesor Titular de Universidad; acreditado para Catedrático de Universidad) in the Department of Physiology of USC and he leads the NeurObesity Group in the Research Centre of Molecular Medicine and Chronic Diseases (CiMUS) of that institution.
- Since the beginning of his PhD, he has focused his research on the hypothalamic regulation of energy balance and obesity, with his current interest on hypothalamic energy sensors (particularly AMPK) and hormones in the modulation of metabolism. In this sense, **he has first described the key role of hypothalamic AMPK and hypothalamic ceramide-induced**



lipotoxicity (and ER stress) in the regulation of energy balance, with particular focus on brown adipose tissue (BAT)-mediated thermogenesis and browning of white adipose tissue (WAT). Moreover, his discovery of these canonical pathways has been instrumental to first describe the central actions of peripheral hormones (such as estrogens, thyroid hormones, BMP8B, GLP1 etc.) on energy balance and BAT function, a physiological concept unknown until his contribution.

- His more recent work involves interest on **i)** drug development by small extracellular vesicles (sEVs)-mediated targeting of hypothalamic AMPK (Nature Metabolism, 2021); **ii)** central modulation of peripheral inflammatory processes (Arthritis and Rheumatology, 2022); **iii)** human neonatal thermogenesis (Nature Communications, 2021).
- He has published 259 peer-reviewed papers (average impact factor: 8.3). His H-index is 70 and his work has been cited more than 18,000 times.
- He has published as senior/corresponding author in journals as: Nature Medicine (1), Nature Metabolism (2), Cell (1), Cell Metabolism (9), Cell Reports (3), Arthritis & Rheumatology (1), Hepatology (1), PNAS (1), PLoS Biology (1), Nature Communications (7), PLoS Genetics (1), Diabetes (8), FASEB Journal (1), Journal of Pathology (2), Metabolism (2), Molecular Metabolism (13), Nature Reviews Endocrinology (4) Frontiers in Neuroendocrinology (1), Trends in Molecular Medicine (3), Trends in Endocrinology & Metabolism (3), Pharmacology & Therapeutics (2), Redox Biology (1), EBioMedicine (2) etc.
- He has given 134 talks/conferences in his career: 30 national, 104 international (13 plenary).
- He is serving/has served on the editorial board of Endocrinology, Journal of Molecular Endocrinology, Journal of Endocrinology, Metabolism, Molecular and Cellular Endocrinology, Molecular Metabolism, American Journal of Physiology, Cells, several Frontiers journals and PLoS ONE, and as a reviewer for several international biomedical journals and funding agencies.
- He is Collaborator of the Biomedical Area (Organ and System Pathophysiology, FOS, Subarea) of the State Research Agency (AEI, Spain).
- He has received, among others, the following awards (total 28; individual 15):
  - Premio Extraordinario de Doctorado de la USC (2003).
  - Basic Research in Obesity of the Spanish Society of Endocrinology (2006 and 2009)
  - Young Investigator Award of the European Association for the Study of Obesity (2008; first Spanish citizen to be awarded with that price)
  - Basic Research in Obesity of the Spanish Society for the Study of Obesity (2009)
  - Award on Neuroendocrinology of the Spanish Society of Endocrinology (2012)
  - Constantes y Vitales Award (2016)
  - European Journal of Endocrinology Prize of the European Society of Endocrinology (2017)
  - Young Basic Research Excellence Award of the European Society for Clinical Investigation (2018)
  - European Thyroid Award of the European Thyroid Association (2018)
  - Jens Sandahl Christiansen Award of the European Society of Endocrinology (2019)
- He has been PI of 23 autonomic, national, and international grants, among them, 6 Spanish National Pan, 1 ERC Starting Grant and 2 La Caixa Grants. As PI, he has got more than 9 million € (9,288,637.76 €; 2006-present).
- He has supervised 18 PhD Thesis, 14TFG, 9 TFM, 4 TIT and 4 Tesinas de Grado
- He teaches (>2200 hours) Endocrinology in the School of Pharmacy of USC and Comparative Physiology in the School of Biology of USC, as well as several Másters

## Part C. RELEVANT MERITS

### C.1. Publications (2012-22); A: original article; R: invited review

- Total number: 259; average impact factor: 8.3; as first author: 45; as corresponding author: 103
  - Last 10 years: 176 papers, average impact factor 9.4
  - Average impact factor of the 10 selected publications: 21.1
1. González-García I ... López M (6/6) (2022). An updated view on human neonatal thermogenesis. *Nature Reviews Endocrinology* 18:263-264. **(Corresponding author)**. IF: 47.564. Key: E (by invitation).



2. Seoane-Collazo P ... **López M** (14/14) (2022). Activation of hypothalamic AMPK ameliorates metabolic complications of experimental arthritis. *Arthritis & Rheumatology* 74:212-222. **(Corresponding author)**. IF: 15.483. Key: A.
3. Milbank E ... **López M** (30/30) (2021). Small extracellular vesicle-mediated targeting of hypothalamic AMPK $\alpha$  corrects obesity through BAT activation. *Nature Metabolism* 3:1415-1431. **(Corresponding author)**. IF: 19.950. Key: A.
4. Urisarri A ... **López M** (15/15) (2021). BMP8 and activated BAT in human newborns. *Nature Communications* 12:5274. **(Corresponding author)**. IF: 17.694. Key: A.
5. Seoane-Collazo P ... **López M** (22/22) (2019). Central nicotine induces browning through hypothalamic K-opioid receptor. *Nature Communications* 10:4037. **(Corresponding author)**. IF: 11.880. Key: A.
6. González-García I ... **López M** (16/16) (2018). Estradiol regulates energy balance by ameliorating hypothalamic ceramide-induced ER stress. *Cell Reports* 25:413-425. **(Corresponding author)**. IF: 8.032. Key: A.
7. Martínez-Sánchez N ... **López M** (40/40) (2017). Hypothalamic AMPK-ER stress-JNK axis mediates the central actions of thyroid hormones on energy balance. *Cell Metabolism* 26:212-229. **(Corresponding author)**. IF: 20.565. Key: A.
8. **López M** ... Diéguez C (1/4) (2016). Hypothalamic AMPK: a canonical regulator of whole-body energy balance. *Nature Reviews Endocrinology* 12:421-432. **(Corresponding author)**. IF: 20.265. Key: R (by invitation).
9. Martínez de Morentin PB ... **López M** (20/20) (2014). Estradiol Regulates Brown Adipose Tissue Thermogenesis via Hypothalamic AMPK. *Cell Metabolism* 20:41-53. **(Corresponding author)**. IF: 17.565. Key: A.
10. Whittle AJ ... **López M**, Vidal-Puig A (16/17) (2012). BMP8B increases brown adipose tissue thermogenesis through both central and peripheral actions. *Cell* 149:871–885. IF: 31.957. Key: A.

### C.2. Congress (2012-22)

1. **López M**. Central actions of estrogens on energy balance. Nuclear receptors and friends. *Keystone Symposia on Molecular and Cell Biology*. Alpbach Congress Centrum, Alpbach (Austria). (2013). **Invited Lecture**.
2. **López M**. Estradiol Regulates Brown Adipose Tissue Thermogenesis Via Hypothalamic AMPK. 98th *Annual Meeting of the Endocrine Society*. Boston (USA). (2016). **Invited Lecture**.
3. **López M**. Central control of adipocyte development and thermogenesis. 13th *International Congress on Obesity*. Vancouver (Canada). (2016). **Invited Lecture**.
4. **López M**. Central actions of estrogens on energy balance. Sex and Gender Factors Affecting Metabolic Homeostasis, Diabetes and Obesity. *Keystone Symposia on Molecular and Cell Biology*. Tahoe City, California (USA). (2017). **Invited Lecture**.
5. **López M**. Hypothalamic AMPK: a golden target against obesity? *19th European Congress of Endocrinology*. Lisbon (Portugal) (2017). **Plenary Lecture**.
6. **López M**. Hypothalamic AMPK: a master regulator of metabolism. Neuronal Control of Appetite, Metabolism and Weight. *Keystone Symposia on Molecular and Cell Biology*. Copenhagen (Denmark). (2017). **Invited Lecture**.
7. **López M**. Hypothalamic AMPK: a canonical regulator of energy balance. 52th Annual Scientific Meeting of the *European Society for Clinical Investigation*. Barcelona (España). (2018). **Plenary Lecture**.
8. **López M**. Energy balance regulation by thyroid hormones at central level. *European Thyroid Association Annual Meeting*. Newcastle (UK). (2018). **Plenary Lecture**.
9. **López M**. Role of hypothalamic AMP-activated protein kinase (AMPK) in the central regulation of energy balance. 21st *European Congress of Endocrinology*. Lyon (France) (2019). **Plenary Lecture**.
10. **López M**. Obesity and impaired energy balance: energy sensing and therapeutic strategies. *Eating Disorders Research Society* (online conference). Sitges (Spain) (2020). **Plenary Opening Lecture**.

### C.3. Research projects as PI (2012-22)

PI of 25 national and international grants, among them. Budget as PI (2006-): 9,288,637.76 €



1. **Title:** Dianas de AMPK $\alpha$  hipotalámica y balance energético. (Code: PID2021-128145NB-I00). **Funder:** Ministerio de Ciencia e Innovación. **Timing:** 2022-2024. **PI:** Miguel López. **Budget:** 544,500 € + FPI Fellowship.
2. **Title:** Succinate/SUCNR1 axis: a novel target for anti-obesity therapies. (Code: LCF/PR/HR20/52400013). **Funder:** Funder: la Caixa” Banking Foundation Health Research 2020. **Timing:** 2020-2023. **PI:** Miguel López (ML). **Budget:** 998,902 € (285,300 € for ML).
3. **Title:** Exosome targeting of the hypothalamus: a novel strategy for the treatment of obesity. (Code: HR19-00155). **Funder:** Funder: la Caixa” Banking Foundation Health Research 2019. **Timing:** 2019-2022. **PI:** Miguel López. **Budget:** 448,300 €.
4. **Title:** Exosomes as innovative Nanomedicine Approaches to reverse obesity and its and Psychotic complications with specific targeting of the hypothalamus. (Code: EURONANOMED2019-050 ENAMEP). **Funder:** EuroNanoMed III. **Timing:** 2020-2022. **PI:** Miguel López (IP WP2, WP3 and WP4). **Budget:** 635,952 € (209,600 € for ML)
5. **Title:** AMPK $\alpha$  hipotalámica y balance energético. (Code: RTI2018-101840-B-I00). **Funder:** Ministerio de Ciencia, Innovación y Universidades. **Timing:** 2018-2021. **PI:** Miguel López. **Budget:** 435,600 € + FPI Fellowship.
6. **Title:** AMPK $\alpha$ 2 hipotalámica en la regulación de la masa corporal y del metabolismo (Code: ED431F 2016/011). **Funder:** Xunta de Galicia, Consellería de Cultura, Educación e Ordenación Universitaria. Proyecto de Excelencia. **Timing:** 2017-2020. **PI:** Miguel López. **Budget:** 200.000 €
7. **Title:** AMPK hipotalámica y balance energético. (Code: SAF2015-71026-R). **Funder:** Ministerio de Economía y Competitividad. **Timing:** 2016-2018. **PI:** Miguel López. **Budget:** 363.000 € + FPI Fellowship.
8. **Title:** The obesity paradox in multiple prevalent diseases: a translational approach. (Code: PIE13/00024). **Funder:** Fondo de Investigaciones Sanitarias (FIS). ISCIII. **Timing:** 2014-2016. **PI:** Miguel López (PI Workpackage 2: Obesity paradox in experimental models of diseases). **Budget:** 68.375 €.
9. **Title:** ER stress hipotalámico: un nuevo mecanismo neuroendocrino de regulación del balance energético. Papel de BiP. (Code: PI12/01814). **Funder:** Fondo de Investigaciones Sanitarias (FIS). ISCIII. **Timing:** 2013-2015. **PI:** Miguel López. **Budget:** 295.241 €
10. **Title:** ObERStress: Hypothalamic lipotoxicity and endoplasmic reticulum stress: a new pathophysiological mechanism of obesity. **Starting Grant, modalidad Consolidator** (Code: ERC-2011-StG-281854-LS4). **Funder:** European Research Council (ERC). **Timing:** 2011-2016. **IP:** Miguel López. **Budget:**1.484.000 €.
11. **Title:** Acciones de las orexinas y la hormona concentradora de melanina sobre el metabolismo lipídico y de la glucosa, un nuevo mecanismo neuroendocrino de regulación del balance energético (Code: PS09/01880). **Funder:** Fondo de Investigaciones Sanitarias (FIS). ISCIII. **Timing:** 2010-2012. **IP:** Miguel López. **Budget:** 246.840 €

#### C.4. Contracts, technological or transfer merits (2012-22)

##### Contracts

1. **Title:** Convenio de colaboración Xunta de Galicia para Personal Investigador responsable de los Programas Grants del Consejo Europeo de Investigación”. (2012-CP070). **Funder:** Xunta de Galicia. **Timing:** 2015-2016. **PI:** Miguel López. **Budget:** 100.000 €
2. **Title:** Research Collaboration Agreement (2013-CL061). **Participants:** Genome Research Limited y USC. **Timing:** 2015-2016. **PI:** Miguel López. **Budget:** 0 €
3. **Title:** Convenio de colaboración Xunta de Galicia para Personal Investigador responsable de los Programas Grants del Consejo Europeo de Investigación”. (2012-CP070). **Funder:** Xunta de Galicia. **Timing:** 2012-2014. **PI:** Miguel López. **Budget:** 150.000 €

##### Patents

1. **Inventors:** Milbank E, Martínez MC, Andriantsitohaina R & López M. **Title:** Populations of small extracellular vesicles for use in the treatment of obesity. **Nº:** : EP21382763; PCT/EP2022/071463. **Country:** European Patent Office. **Date:** 17/8/2021. **Institution:** USC. **Countries it has been extended:** Europe, international.