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## BIOGRAPHICAL SKETCH

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NAME  
Maria Pilar Lostao

POSITION TITLE  
Professor of Physiology  
University of Navarra, Pamplona, Spain.

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### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
University of Murcia, Murcia, Spain	Bachelor	07/85	Biology
University of Navarra, Pamplona, Spain	Ph.D.	07/91	GI Physiology
Department Physiology. UCLA School of Medicine, Los Angeles, CA, USA	Postdoctoral	01/93-09/96	Molecular mechanisms of intestinal transport/ Molecular Architecture of the Na <sup>+</sup> /Glucose cotransporter /Familial glucose galactose malabsorption. /Enhanced drug delivery via intestinal cotransporters.

### A. Personal Statement:

My main field of research is focused in membrane transporters and can be grouped in two main areas: 1) Omega-3 fatty acids and their derived lipid mediators as blockers of TNF- $\alpha$ -induced decrease of intestinal nutrients transport and its relation with obesity. 2) GLUT-12 physiological role in small intestine and adipose tissue.

### B. Positions and Honors

#### Positions held:

- September 2012-Present. Professor of Physiology, University of Navarra, Pamplona, Spain.
- October 2002- September 2012 Associate Professor of Physiology, University of Navarra, Pamplona, Spain
- October 1996-October 2002. Assistant Professor of Physiology, University of Navarra, Pamplona, Spain.
- January 1993-September 1996. Post-doctorate. Department of Physiology, University of California, Los Angeles,
- October 1991-December 1992. Lecturer of "Principles of Animal Experimentation", University of Navarra, Pamplona, Spain
- October 1989-September 1990. Lecturer of "Biology", University of Navarra, Pamplona, Spain
- October 1988-September 1992. Teaching Assistant of "Physiology", University of Navarra, Pamplona, Spain
- October 1986-September 1988. Teaching Assistant of "Physics", University of Navarra, Pamplona, Spain
- 20-24 November 2006. Visiting Professor, University of Concepción, Concepción, Chile
- 6-10 December 2010. Visiting Professor, University of Concepción, Concepción, Chile and *Universidad Austral de Chile*, Valdivia, Chile.
- March 1-May, 28 2011. Visiting Professor, Department of Physiology, David Geffen School of Medicine at UCLA. Los Angeles, California USA.

#### Administration:

- September 2012- Present. Vice-President for International Relations and Alumni Affairs, University of Navarra, Pamplona, Spain
- February 2011- September 2012. Chair of the Department of Food Science, Nutrition, Physiology and Toxicology, University of Navarra, Pamplona, Spain

- August 2008-January 2011. Vice-Chair of the Department of Food Science, Nutrition, Physiology and Toxicology, University of Navarra, Pamplona, Spain.
- January 2007-July 2008. Academic Secretary of the Department of Food Science, Nutrition, Physiology and Toxicology, University of Navarra, Pamplona, Spain.
- January 2001-December 2006. Academic Secretary of the Department of Physiology and Nutrition, University of Navarra, Pamplona, Spain.
- August 2005-August 2010. Coordinator of the Undergraduate Students International Exchange Program, Faculty of Sciences, University of Navarra, Pamplona, Spain.
- **Societies:** Regular member of the American Physiology Society since 1997, Spanish Society of Physiological Sciences since 1994, Spanish Society of Biochemistry and Molecular Biology since 1998.
- **Committees:**
  - 2010-Present. Editor-in-chief of the “Journal of Physiology and Biochemistry”
  - October 2005-April 2010. Executive Committee of the “European Intestinal Transport Group” (EITG) and organizer of the XXII Meeting of the EITG held in September 2008 in Pamplona, Spain.
  - October 2005-October 2007. Coordinator of the “Membrane Transporters Group” of the Spanish Society of Biochemistry and Molecular Biology.
  - 1999-2009. Member of the Board Committee of the “Journal of Physiology and Biochemistry” since

### Teaching:

October 1996- Present

- Responsible lecturer of “Molecular Physiology” to the students of Biochemistry.
- Responsible lecturer of “Human Physiology” to the students of Human Nutrition.
- Active involvement in lecturing “Animal Physiology” to the students of Biology and “General Physiology” to the students of Biochemistry.
- Responsible lecturer of the course on “Membrane Transporters” to postgraduate students.

### Projects supervision

- 8 Ph.D. Thesis (with honors) and currently supervising 2 Ph.D. students. 15 Master’s projects.
- External reviewer of 26 Ph.D dissertations from different Spanish universities.

### Professional Service:

Reviewer of research grants for:

- *Agencia Nacional de Evaluación y Prospectiva* of the Spanish Ministry of Education and Science
- *Fondo de Investigación Sanitaria*, Spanish Ministry of Health (nº 34701)
- The Wellcome Trust.

External reviewer for the following journals: *Comparative Biochemistry and Physiology*, *Scandinavian Journal of Gastroenterology*, *Journal of Physiology and Biochemistry*, *Hormone and Metabolic Research*, *Pediatric Research*, *American Journal of Physiology: GI and liver Physiology*, *Biochemical Pharmacology*, *Cytokine*, *Canadian Journal of Physiology and Pharmacology*.

### Grant Support

From 1997- Present: Research Project founded by University of Navarra (5); Navarra Government (3); Spanish Government (5); Marcelino Botín Foundation, Spain (1)

### C. Selected Peer-reviewed Publications

1. M.P. Lostao, B.A. Hirayama, D.D.F. Loo y E.M. Wright. Phenylglucosides and the Na<sup>+</sup>/glucose cotransporter (SGLT1): analysis of interactions. The Journal of Membrane Biology. 1994, 142: 161-170

2. M. Panayotova-Heiermann, D.D.F. Loo, M.P. Lostao y E. M. Wright. Sodium/D-glucose cotransporter charge movements involve polar residues. The Journal of Biological Chemistry. 1994, 269: 21016-21020
3. E. M. Wright, D.D.F. Loo, M. Panayotova-Heiermann, M.P. Lostao, B.H. Hirayama, B. Mackenzie, K. Boorer y G. Zampighi. Active sugar transport in eukaryotes. The Journal of Experimental Biology. 1994, 196: 197-212
4. M.P. Lostao, B.A. Hirayama, M. Panayotova-Heiermann, S.L. Sampogna, D. Bok y E. M. Wright. Arginine-427 in the Na<sup>+</sup>/glucose cotransporter (SGLT1) is involved in the protein insertion into the plasma membrane. FEBS Letters. 1995, 377: 181-184
5. E. Turk, C.J. Kerner, M.P. Lostao y E.M. Wright. Membrane topology of the human Na<sup>+</sup>/glucose cotransporter SGLT1. The Journal of Biological Chemistry. 1996, 271: 1925-1934.
6. M.G. Martín, E. Turk, M.P. Lostao, C. Kerner y E.M. Wright. Defects in Na<sup>+</sup>/glucose cotransporter SGLT1 trafficking and function cause glucose-galactose malabsorption. Nature Genetics. 1996, 12: 216-220
7. B.A. Hirayama, M.P. Lostao, M. Panayotova-Heiermann, D.D.Loo, E. Turk y E.M. Wright. Kinetic and specificity differences between rat, human and rabbit Na<sup>+</sup>/glucose cotransporters (SGLT-1). The American Journal of Physiology. 1996, 270 (Gastrointest.Liver.Physiol.33): G919-G92
8. M.G. Martín, M.P. Lostao, E. Turk, J. Lam, M. Kreman y E.M. Wright. Compound missense mutations in the sodium/D-glucose cotransporter result in trafficking defects. Gastroenterology. 1997, 112: 1206-1212
9. M.M. Pérez del Castillo, M.P. Lostao, A. Barber y F. Ponz. Some technical precisions to a method for *in vivo* intestinal absorption studies. Journal of Physiology and Biochemistry. 1997, 53: 281-288
10. M.P. Lostao, E. Urdaneta, E. Martínez-Ansó, A. Barber y J.A. Martínez. Presence of Leptin receptors in rat small intestine and leptin effect on sugar absorption. FEBS Letters. 1998, 423: 302-306
11. E. Urdaneta, A. Barber, E.M. Wright y M.P. Lostao. Functional expression of the rabbit intestinal Na<sup>+</sup>/L-proline cotransporter (IMINO system) in *Xenopus laevis* oocytes. Journal of Physiology and Biochemistry. 1998, 54: 155-160
12. A. Díez-Sampedro, E. Urdaneta, M.P. Lostao y A. Barber. Galactose transport inhibition by cytochalasin E in rat intestine *in vitro*. Canadian Journal of Physiology and Pharmacology. 1999, 77: 96-101
13. E. Martínez-Ansó, M.P. Lostao and J.A. Martínez. Letter to the Editor: Immunohistochemical localization of leptin in rat kidney. Kidney International. 1999, 55, 1129-30.
14. A. Díez-Sampedro, M.P. Lostao y A. Barber. Cytoskeleton involvement on intestinal absorption processes. Journal of Physiology and Biochemistry. 2000, 56: 25-32.
15. A. Díez-Sampedro, M.P. Lostao, E.M. Wright y B.A. Hirayama. Glycoside binding and translocation in Na<sup>+</sup>-dependent glucose cotransporters: comparison of SGLT1 and SGLT3. The Journal of Membrane Biology. 2000, 176: 111-117
16. M.P. Lostao, Joao F.Mata, I.M. Larrayoz, S.M. Inzillo, F.J. Casado y M. Pastor-Anglada. Electrogenic uptake of nucleosides and nucleosides-derived drugs by the human nucleoside transporter 1 (hCNT1) expressed in *Xenopus laevis* oocytes. FEBS Letters. 2000, 481: 137-140
17. J.F.Mata, J.M. García-Manteiga, M.P. Lostao, S. Fernández-Veledo, E. Guillén-Gómez, I.M. Larrayoz, J. Lloberas, F.J. Casado y M. Pastor-Anglada. Role of the human concentrative nucleoside transporter (hCNT1) in the cytotoxic action of 5'-Deoxy-5-fluorouridine, an active intermediate metabolite of capecitabine, a novel oral anticancer drug. Molecular Pharmacology. 2001, 59: 1542-1548
18. J. Pinilla, A. Barber y M.P. Lostao. Active transport of alanine by the neutral amino acid exchanger ASCT1. Canadian Journal of Physiology and Pharmacology. 2001, 79: 1023-1029
19. J. Barrenetxe, A. Barber y M.P. Lostao. Leptin effect on galactose absorption in mice jejunum. Journal of Physiology and Biochemistry. 2001, 57: 345-346

20. J. Barrenetxe, A.C. Villaro, L. Guembe, I. Pascual, M. Muñoz-Navas, A Barber y M.P. Lostao. Distribution of the long leptin receptor isoform in brush border, basolateral membrane and cytoplasm of enterocytes. GUT. 2002, 50:797-802.
21. C. Bértolo, J. Barrenetxe, A Barber y M.P. Lostao. Cytokine effect on intestinal galactose absorption. Journal of Physiology and Biochemistry. 2002, 58: 61-62
22. FJ Casado, MP Lostao, I Aymerich, IM Larrayoz, S Dufлот, S Rodríguez-Mulero, M Pastor-Anglada. Minireview: Nucleoside transporters in absorptive epithelia. Journal of Physiology and Biochemistry. 2002, 58,207-216
23. J. Pinilla, A. Barber y M.P. Lostao. Transport of proline and hydroxyproline by the neutral amino acid exchanger ASCT1. The Journal of Membrane Biology. 2003, 195: 27-32.
24. A. Barber, J. Barrenetxe, R. Palacios, M.P. Lostao . Functional expression of the murine short isoform of the leptin receptor Ob-Rc (muB1.219) in *Xenopus laevis* oocytes. Journal of Physiology and Biochemistry, 2003, 59:119-126.
25. I. Larráyoз, F.J. Casado, M. Pastor-Anglada, M.P. Lostao . Electrophysiological characterization of the human Na<sup>+</sup>/nucleoside cotransporter 1 (hCNT1) and role of adenosine on hCNT1 function. The Journal of Biological Chemistry. 2004. 5, 8999-9007
26. J. Barrenetxe, N. Sainz, A. Barber, M.P. Lostao . Involvement of PKA and PKC in the inhibitory effect of leptin on intestinal galactose absorption. Biochemical and Biophysical Research Communications 2004. 317, 717-721.
27. C. Iñigo, A. Barber, M.P. Lostao. Leptin effect on intestinal galactose absorption in ob/ob and db/db mice. Journal of Physiology and Biochemistry. 2004, 60: 93-97
28. P. Cano-Soldado, I.M. Larrayoz, M. Molina-Arcas, F.J. Casado, M.P. Lostao, J.Martínez-Picado, M. Pastor-Anglada. Interaction of nucleoside inhibitors of HIV-1 reverse transcriptase (NRT) with the concentrative nucleoside transporter-1 (hCNT1). Antiviral Therapy. 2004, 9:987–992.
29. I. Fernández de Arcaya, M.P. Lostao, A. Martínez, A. Berjón, A Barber. Effect of adrenomedullin and proadrenomedullin N-terminal 20 peptide on sugar transport in the rat intestine. Regulatory Peptides. 2005. 129: 147-154.
30. M Pastor-Anglada, P. Cano-Soldado, M. Molina-Arcas, IM Larrayoz, MP Lostao, J. Martínez-Picado, FJ Casado. Review: Cell entry and export of nucleoside analogues. Virus Research. 2005, 107, 151-164.
31. I. Pascual, A. Berjón, M.P. Lostao, A. Barber. Transport of D-galactose by the gastrointestinal tract of the locust, *Locusta migratoria*.T. Comparative Biochemistry and Physiology. 2006, 143: 20-26.
32. C. Iñigo, A. Barber, M.P. Lostao. Na<sup>+</sup> and pH dependence of proline and β-alanine absorption in rat small intestine. Acta Physiologica (previously 2005 Acta Physiologica Scandinavica). 2006. 186, 271-278
33. I.M. Larráyoз, A. Fernández-Nistal, A. Garcés, E. Gorraitz, M.P. Lostao. Characterization of the rat Na<sup>+</sup>/nucleoside cotransporter 2 (rCNT2) and transport of nucleoside-derived drugs using electrophysiological methods . American Journal of Physiology. Cell Physiology. 2006, 291:C1395-C1404
34. P. Amador, J. García-Herrera, M.C. Marca, J. de la Osada, S. Acín, M.A. Navarro, M.T. Salvador, M.P. Lostao, M. J. Rodríguez-Yoldi. Inhibitory effect of TNF-alpha on the intestinal absorption of galactose. Journal of Cellular Biochemistry. 2007, 101:99-111
35. C. Iñigo, N. Patel,G.L.Kellett, A. Barber, M.P. Lostao. Luminal leptin inhibits intestinal sugar absorption in vivo. Acta Physiologica. 2007, 190: 303-310
36. P. Amador, J. García-Herrera, M.C. Marca, J. de la Osada, S. Acín, M.A. Navarro, M.T. Salvador, M.P. Lostao, M. J. Rodríguez-Yoldi. Intestinal D-galactose transport in an endotoxaemia model in the rabbit. Journal of Membrane Biology. 2007, 215:125-133.
37. P. Cano-Soldado, M. Molina-Arcas, B. Algueró, I. Larráyoз, M.P. Lostao, A. Grandas, F. J. Casado, M. Pastor-Anglada. Compensatory effects of the human nucleoside transporters on the response to nucleoside-derived drugs in breast cancer MCF7 cells. Biochemical Pharmacology 2008; 75:639-648

38. P. Amador, M.C. Marca, J. García-Herrera, M.P. Lostao, N.Guillén, J. de la Osada, M. J. Rodríguez-Yoldi. Lipopolysaccharide induces inhibition of galactose intestinal transport in rabbits *in vitro*. Cellular Physiology and Biochemistry. 2008, 22: 715-724.
39. E. Gorraitz, M. Pastor-Aglada, M.P. Lostao. Effects of Na<sup>+</sup> and H<sup>+</sup> on steady-state and presteady-state currents of the human concentrative nucleoside transporter 3 (hCNT3). Pflugers Archive-European Journal of Physiology. 2010, 4260: 617-632
40. R. Ducroc, Y. Sakar, C. Fanjul, A. Barber, A. Bado, M.P. Lostao. Luminal leptin inhibits L-glutamine transport in rat small intestine: involvement of ASCT2 and B0AT1. American Journal of Physiology. Gastrointestinal and Liver Physiology. 2010. 299: G179-G185
41. P.Martinez-Becerra, O. Briz, M.R. Romero, R.I. Rodríguez Macias, M.J. Perez, C. Sancho-Mateo, M.P. Lostao, J.M. Fernandez-Abalos, J.J. Garcia Marin. Further characterization of the electrogenicity and pH-sensitivity of the human organic anion-transporting polypeptides OATP1B1 and OATP1B3. Molecular Pharmacology. 2011, 79: 596-607.
42. P. Cano-Soldado, E. Gorraitz, E. Errasti-Murugarren1, F.J. Casado, M. P. Lostao, M. Pastor-Anglada. Functional analysis of the human concentrative nucleoside transporter-1 variant hCNT1S546P provides insight into the sodium binding pocket. American Journal of Physiology. Cell Physiology. 2012, 302: C257-C266
43. C. Fanjul, J. Barrenetxe, C. Iñiog, Y.Sakar, R.Ducroc, A. Barber, M. P. Lostao. Leptin regulates sugar and amino acids transport in the humana intestinal cell line Caco-2. Acta Physiologica. 2012, 205: 82–91.
44. J. Pujol-Giménez, J. Barrenetxe, P. González-Muniesa, M.P. Lostao. The facilitative glucose transporter GLUT12: What do we know and what would we like to know? Journal of Physiology and Biochemistry. 2013. 69:325-33.
45. J. Barrenetxe, O. Sánchez, A. Barber, S. Gascón, M.Jesús. Rodríguez-Yoldi, M. P. Lostao. TNF $\alpha$  regulates sugar transporters in the human intestinal epithelial cell line Caco-2. Cytokine. 2013, 64: 181-187.
46. A. de la Garza, U. Etxeberria, M.P. Lostao, B. San Román, J. Barrenetxe; J.A. Martínez, F. Milagro. Helichrysum and Grapefruit Extracts Inhibit Carbohydrate Digestion and Absorption, Improving Postprandial Glucose Levels and Hyperinsulinemia in Rats. Journal of Agricultural and Food Chemistry. 2013, 61:12012–12019.
47. J. Pujol-Gimenez, E. Martisova, A. Perez-Mediavilla, M. P. Lostao, M.J. Ramirez. Expression of the glucose transporter GLUT12 in Alzheimer's disease patients. Journal of Alzheimer's Disease. 2014, 42: 97-101
48. C. Fanjul, J. Barrenetxe, L. de Pablo-Maiso, M.P. Lostao. *In vivo* regulation of intestinal absorption of amino acids by leptin. Journal of Endocrinology. 2015, 224: 17-23
49. J.Pujol-Gimenez, F.Pérez de Heredia, M.A. Idoate, R. Airley, M.P. Lostao, A.R. Evans. Could GLUT12 be a Potential Therapeutic Target in Cancer Treatment? A Preliminary Report. Journal of Cancer. 2015, 6: 139-143
50. Pujol-Gimenez J, Perez AA, Reyes A, Loo DD, Lostao MP. Functional characterization of the human facilitative glucose transporter 12 (GLUT12) by electrophysiological methods. Am J Physiol Cell Physiol. 2015, 308: C1008-C1022
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51. Autores: Claudio-Montero A, Pinilla-Macua I, Fernandez-Calotti P, Sancho-Mateo C, Lostao MP, Colomer D, Grandas A, Pastor-Anglada M. Fluorescent nucleoside derivatives as tool for the detection of concentrative nucleoside transporters (CNTs) activity using confocal microscopy and flow cytometry. Mol Pharmaceutics. 2015, 12: 2158-2166
52. López-Yoldi M, Castilla-Madrigal R, Lostao MP, Barber A, Prieto J, Martínez JA, Bustos M, Moreno-Aliaga MJ. Cardiotrophin-1 decreases intestinal sugar uptake in mice and in Caco-2 cells. Acta Physiol. 2016, 217:217-226.
53. Castilla-Madrigal R, Barrenetxe J, Moreno-Aliaga MJ, Lostao MP. EPA blocks TNF- $\alpha$ -induced inhibition of sugar uptake in Caco-2 cells via GPR120 and AMPK. J Cell Physiol. 2017 Aug 3. doi: 10.1002/jcp.26115. [Epub ahead of print]

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