

Part A. PERSONAL INFORMATION		CV date	2021/14/11
First and Family name	María Julia Bragado		
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0001-7770-0775	
	SCOPUS Author ID (*)	6701407676	
	WoS Researcher ID (*)	L-6988-2014	

A.1. Current position

Name of University/Institution	Universidad de Extremadura (Unex)		
Department/Center	Research Institute of Biotechnology in Livestock and Cynegetic		
Address and Country	Av. de las Ciencias, s/n, 10003. Cáceres. Spain		
Phone number	927257160	E-mail	jbragado@unex.es
Current position	Assistant Profesor (Titular)	From	Biochemistry Molecular Biology
Key words	Sperm, signalling, protein phosphorylation, proteome, metabolome		

A.2. Education

PhD, Licensed, Graduate	University	Year
First Degree in Biology	Universidad de Salamanca, Spain	1990
PhD in Biological Sciences	Universidad de Salamanca, Spain	1995

A.3. General indicators of quality of scientific production (see instructions)

Scientific publications: 66

Total number of citations: 1239

h-index: 21

Thesis supervised: 4 and 1 currently under supervision

National Research Achievements evaluated by ANECA (6-year research): 4 (last in 2016)

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

Degree in Biological Sciences (1990) and Ph. D Thesis in Biological Sciences (1995), Univ. Salamanca. Postdoc Research Appointment (1995-98, Univ. Michigan, Ann Arbor, USA). Postdoc Research Appointment from Spanish Ministry of Science (1999-2000, Univ. Alcalá). Assistant Lecturer in Biochemistry and Molecular Biology (2000-04, Univ. Extremadura). PhD assistant professor (2004-08, Univ. Extremadura). University Professor at Biochemistry and Molecular Biology Department (since 2008, Univ. Extremadura)

Scientific Achievements

66 scientific publications reporting research on physiological regulation of exocrine pancreas by gastrointestinal hormones (PhD); intracellular signaling mediated by protein phosphorylation in pancreatic acinar cells (post-doc USA); post-translational modification of proteins (phosphorylation) mediated by kinases in different cell types; intracellular signaling pathways mediated by phosphorylation that regulate the function of mammalian spermatozoa; identification of the AMPK kinase and its regulatory role in mammalian spermatozoa, including human; deciphering of human sperm phosphoproteome associated to sperm motility.

Specific Scientific Achievements

- Intracellular signaling pathways regulating pig sperm motility by protein phosphorylation
- Identification of the AMPK kinase in porcine and human spermatozoa and its role in the main physiological processes such as sperm motility.
- Deciphering of human sperm phosphoproteome associated to sperm motility to identify potential biomarkers in male infertility caused by asthenozoospermia
- Outstanding paper Award 2019 published in the Asian Journal of Andrology: AMP-activated kinase in human spermatozoa: identification, intracellular localization, and key function in the regulation of sperm motility. Asian J Andrology 2017; 19: 707-14 (3000 CNY)
- Guest speaker -Plenary Lecture- at I Congress of Research in Health Sciences (Beira Interior University, Covilhã, Portugal, 2015). Conference entitled: *AMPK: how an energy sensor kinase regulates mammalian spermatozoa function?*



- Coordinator of the research team “Intracellular Signaling and Reproduction Technology”
- Chief of the Biochemistry and Molecular Biology and Genetics Department at Unex (2021)

Transfer of Results to Assisted Reproduction (AR)

- Improvement of commercial extenders composition for production of pig seminal doses
- Results transfer granted by Projects of Technological Development, Innovation and Technology Transfer from Extremadura Government and with companies agreements, such as TECNOGENEXT enterprise, the largest producer of pig seminal doses (Iberian and Duroc) for Artificial Insemination in Extremadura. This technology transfer has led this company to increase the number and quality of seminal doses obtained per each animal

PhD Supervision: 4 Doctoral Thesis and 1 currently under supervision

Long-term scientific-technical objectives:

- To deepen the post-translational modifications of sperm proteins and their implication in the main functional processes of mammalian sperm to further improve AR methodology.
- To study human sperm metabolome to propose specific metabolites as biomarkers for sperm motility for the diagnosis of male infertility and also use them as molecular targets to treat or improve male infertility.
- To combine human sperm phosphoproteome and metabolome results to optimize the current sperm handling techniques in the AR area

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (selected 10 from last 10 years)

- Sperm phosphoproteome: Unraveling male infertility. (2022). Serrano R, Garcia-Marin LJ, **Bragado MJ**. *Biology*; 11, 659. doi: 10.3390/biology11050659.
- Human sperm phosphoproteome reveals differential phosphoprotein signatures that regulate human sperm motility. (2020) Martin-Hidalgo D, Serrano R, Zaragoza C, Garcia-Marin LJ, **Bragado MJ**. *J Proteomics*; 215: 103654. doi: 10.1016/j.jprot.2020.103654.
- Impaired mammalian sperm function and lower phosphorylation signaling caused by the herbicide RounupUltra Plus are due to its surfactant component. (2021). Torres-Badia M, Solar-Malaga S, Martin-Hidalgo D, Hurtado de Llera A, Gomez-Candelo A, Garcia-Marin LJ, Gonzalez-Fernandez L, **Bragado MJ**. *Theriogenology* 172: 55-66. doi 10.1016/j.theriogenology.2021.05.026.
- Molecular mechanism involved in the impairment of boar sperm motility by peroxynitrite-induced nitrosative stress. (2020). Serrano R, Garrido N, Cespedes JA, Gonzalez-Fernandez L, Garcia-Marin LJ, **Bragado MJ**. *Int J Mol Sci*. doi 10.3390/ijms21041208.
- Study of the Metabolomics of Equine Preovulatory Follicular Fluid: A Way to Improve Current In Vitro Maturation Media. (2020) Fernández-Hernández P, Sánchez-Calabuig MJ, **Garcia-Marin LJ**, Bragado MJ, Gutiérrez-Adán A, Millet O, Bruzzone C, González-Fernández L, Macías-García B. *Animals (Basel)*; 10(5): 883. doi: 10.3390/ani10050883.
- Metformin inhibits human spermatozoa motility and signalling pathways mediated by protein kinase A and tyrosine phosphorylation without affecting mitochondrial function. (2019) Calle-Guisado V, González-Fernández L, Martin-Hidalgo D, Garcia-Marin LJ, **Bragado MJ**. *Reprod Fertil Dev*; 31(4):787-795. doi: 10.1071/RD18256.
- Human sperm motility is downregulated by the AMPK activator A769662. (2017) Calle-Guisado V, Hurtado de Llera A, González-Fernández L, **Bragado MJ**, Garcia-Marin LJ. *Andrology*; 5(6):1131-1140. doi: 10.1111/andr.12423.
- AMP activated kinase in human spermatozoa: identification, intracellular localization and key function in the regulation of sperm motility. (2017) Calle-Guisado V, Hurtado de Llera A, Martin-Hidalgo D, Mijares J, Gil MC, Álvarez IS, **Bragado MJ**, Garcia-Marin LJ. *Asian J Androl* 19(6): 707-714 doi: 10.4103/1008-682X.185848
- AMPK up-activation reduces motility and regulates other functions of boar spermatozoa. (2015) Hurtado de Llera A, Martin-Hidalgo D, Gil MC, Garcia-Marin LJ, **Bragado MJ**. *Mol Hum Reprod*. 2015 Jan;21(1):31-45. doi: 10.1093/molehr/gau091.
- The calcium/CaMKK α / β and the cAMP/PKA pathways are essential upstream regulators of AMPK activity in boar spermatozoa. (2014) Hurtado de Llera A; Martin-Hidalgo D; Gil MC; Garcia-Marin LJ; **Bragado MJ**. *Biology of Reproduction* 90(2): 1-10.
- AMP-activated kinase AMPK is expressed in boar spermatozoa and regulates motility. (2012) Hurtado de Llera A, Martin-Hidalgo D, Gil MC, Garcia-Marin LJ, **Bragado MJ**. *PLoS One*. 2012;7(6):e38840. doi: 10.1371/journal.pone.0038840.



C.2. Research projects (selected from last 10 years)

1) Reference: IB20154. Title: Metabolomics associated with human sperm motility: identification of biomarkers of male infertility and potential therapeutic targets. Funding: Council of Employment, Enterprise and Innovation, Government of Extremadura, Spain and European Regional Development Funds (FEDER).

Principal investigator: María Julia Bragado González (University of Extremadura)

Date starting: 03/06/2021 to 03/06/2024 Amount: 149.248,00€ Project Status: Ongoing

2) Reference: AGL2017-84681-R. Title: Optimization of equine in vitro fertilization: characterization and use of oviductal fluid in the incubation media design. Funding: Ministry of Economy, Industry and Competitiveness, Spain and European Regional Development Funds (FEDER).

Principal investigator: Beatriz Macías García (University of Extremadura)

Start date: 01/01/2018 Completion date: 31/12/2020. Amount: 142.659,00 €.

Type of participation: Researcher

3) Ref: EQC2018-004308-P. Title: Laboratory of Cellular Biochemistry and Molecular Endocrinology. Funding: Ministry of Economy, Industry and Competitiveness (Spain, FEDER)

Principal investigator: Luis J. García Marín (University of Extremadura).

Start date: 20/11/2018 Completion date 31/12/2019. Amount: 142.659,00 €

Type of participation: Researcher

4) Reference: IB16184. Title: Study of post-translational modifications of human semen proteins: implications for their cryopreservation. Funding: Council of Employment, Enterprise and Innovation, Government of Extremadura, Spain.

Principal investigator: Luis J. García Marín (University of Extremadura).

Start date: 3/6/2017 Completion date: 2/6/2020. Amount: 148.585,80 €

Type of participation: Researcher

5) Reference: IB13121. Title: Role of AMP kinase in optimizing human sperm motility: possible therapeutic application for asthenozoospermia. Funding: Council of Employment, Enterprise and Innovation, Government of Extremadura, Spain

Principal investigator: Luis J. García Marín (University of Extremadura).

Start date: 31/07/2014 Completion date: 30/07/2016. Amount: 54.340,00 €

Type of participation: Researcher

6) Reference: IB13163. Title: Development of a prepuberal immunocastration protocol in males of Iberian pig to improve the efficacy of the treatment and the quality of the meat with respect to the immunocastration of adults. Funding: Council of Employment, Enterprise and Innovation, Government of Extremadura, Spain

Principal investigator: F. I. Hernandez Garcia (CICYTEX, Research Center Extremadura).

Start date: 31/07/2014 Completion date: 30/07/2016. Amount: 59.961,00 €

Type of participation: Researcher

7) Ref: UNEX13-1E-1721. Title: Non-clinical GLP testing laboratories. Funding: Council of Employment, Enterprise and Innovation, Government of Extremadura, Spain, and FEDER.

Principal investigator: Luis J. García Marín (University of Extremadura).

Start date: 01/01/2013 Completion date: 31/12/2015. Amount: 137.445,21 €

Type of participation: Researcher

8) Reference: AGL2010-15188/GAN. Title: Function of AMP-activated protein kinase, AMPK, in the male germ cell: possible biotechnological application to the preservation of porcine semen. Funding: Ministry of Science and Innovation, Spain

Principal investigator: Luis J. García Marín (University of Extremadura).

Start date: 1/1/2011 Completion date: 31/12/2013. Amount: 108.900,00 €

Type of participation: Researcher

C.3. Contracts, technological or transfer merits

-Title: *In vitro* production of porcine embryos. Funding: Mazafrá enterprise

Principal investigator: Lauro Gonzalez-Fernandez (University of Extremadura)

Start date: 12/01/2018 Completion date: 12/01/2020

-Reference: 214/15. Title: Optimization of human sperm motility for use in assisted reproductive techniques. Funding: GENIUL enterprise.

Principal investigator: Luis J García-Marín (University of Extremadura)

Start date: 01/09/2015 Completion date: 01/09/2016



-Reference: AP 123412013. Title: Role of AMP-kinase in the optimization of motile function in human spermatozoa and its possible use as a therapy in Kartagener syndrome. Funding: "Mutua Madrileña" Trust- Medical Research.

Principal investigator: Ignacio Santiago Álvarez (University of Extremadura).

Start date: 01/05/2013 Completion date: 30/04/2015. Amount: 30.000,00 €

C.5. PhD Supervisor (last 10 years)

-Title: Expression and function of AMP-activated kinase, AMPK, in human spermatozoa. PhD Student: Violeta Calle Guisado. University of Extremadura. Date: July 19, 2019.

Qualification: Outstanding "Cum Laude". International Mention of Doctor. Extraordinary Doctorate Award in the academic year 2018-2019.

-Title: Expression and function of the AMP-activated protein kinase, AMPK, in the male pig germ cell. PhD Student: Ana Hurtado de Llera. University of Extremadura. March 20, 2014.

Qualification: Excellent "Cum Laude". European mention of Doctor. Extraordinary Doctorate Award in the academic year 2013-2014.

-Title: Cell physiology and semen quality during the conservation of refrigerated pig semen. PhD Student: David Martín Hidalgo. Universidad de Extremadura. Date: December 10, 2013.

Qualification: Excellent "Cum Laude". European mention of Doctor. Extraordinary Doctorate Award in the academic year 2013-2014.

C.6. Communications in Scientific Congresses (last 5 years)

-20 communications in International meetings and 11 in National Meetings.

-Guest Speaker -Plenary Lecture- at the opening session of the I Congress of Research in Health Sciences (Beira Interior University, Covilhã, Portugal, 2015). Title: *AMPK: how an energy sensor kinase regulates mammalian spermatozoa function?*

-Speaker at the I National congress of Biosciences students. Conference entitled: Function of AMPK in spermatozoa: a revival of Dr. Jekyll and Mr. Hyde? Cáceres, Spain. 2020.

C.7. Other merits

- Coordinator of the research group on Intracellular Signalling and Reproduction Technology (SINTREP). Reference BBB017, Government of Extremadura

-Member of the Research Institute in Biotechnology (INBIO G+C), University of Extremadura.

-Guest Editor of special Issue "Advances in Molecular Regulation of Spermatozoa Function" published in the International Journal of Molecular Sciences (MDPI editorial). 2020

-Member of the Scientific Committee of the I Congress in Health Sciences Research Towards Innovation and Entrepreneurship- Trends in Endocrinology and Neurosciences, held in Covilhã, Portugal, November 2015.

- Network of Excellence for *in vitro* production of embryos of animals of veterinary interest. Funding: Ministry of Economy, Industry and Competitiveness, Spain. Reference: AGL2016-81890-REDT. Principal investigator: María Teresa Paramio Nieto (Auton. Univ. of Barcelona)
Start date: 1/7/2017 Completion date 30/6/2019 Amount: 20.000,00 €

- Head of the Department of Biochemistry and Molecular Biology and Genetics (since 2021)

- Member of the Committee to elaborate the academic plan of the Biochemistry Degree (University of Extremadura).