

Part A. PERSONAL INFORMATION

CV date

4/12/2022

First and Family name	Francisco Amaro Torres		
ID number	06262628-G	Age	40
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0002-0061-477X	
	SCOPUS Author ID (*)	24491600400	
	WoS Researcher ID (*)	Y-5610-2019	

(*) Optional

(**) Mandatory

A.1. Current position

Name of University/Institution	Universidad Complutense de Madrid (UCM)		
Department	Genética, Fisiología y Microbiología		
Address and Country	José Antonio Novais, 12		
Phone number	913944963	E-mail	famaroto@ucm.es
Current position	Profesor Contratado Doctor	From	5/07/2022
Key words	Legionella, Burkholderia, virulence, amoebae, protozoa, Tetrahymena		

A.2. Education

PhD, Licensed, Graduate	University	Year
PhD Biology (Microbiology)	Universidad Complutense de Madrid	2009
Licensed in Biology	Universidad Complutense de Madrid	2004

A.3. General indicators of quality of scientific production

Publications in the first decile (**D1**): **4**

Publications in the first quartile (**Q1**): **16**

Total number of citations: **591** (Web of Science), **842** (Researchgate)

Average number of citations (during the last 5 years): 64 citations/year (Web of Science)

h-index: **17** (Researchgate, GScholar, WOS)

Part B. CV SUMMARY

FA graduated as Biologist (2004) and received his PhD degree in Biology (Microbiology) (2009) from UCM. His PhD thesis produced five peer-reviewed articles, two cell biosensors (protected under national patents) and was awarded with one of the 2010 UCM PhD Prizes (*Premio Extraordinario de Doctorado*). From 2010-2013 he did postdoctoral work at the Department of Microbiology at The University of Chicago (USA) as Fulbright Scholar, where he studied the ecology and evolution of *Legionella pneumophila* and contributed to the sequencing and genomic analysis of 38 *Legionella* species. From 2014-2018 FA joined Saint Louis University-Madrid Campus as Faculty member at the Department of Health Sciences and then moved to the Department of Organic Chemistry at UCM as Postdoctoral Researcher (2017-2018). There, FA worked on a multidisciplinary research group that successfully developed a photo-sterilizable catheter aimed to prevent nosocomial infections (International Patent Appl. PCT/EP2020/067991). On 2018 FA joined the Department of Genetics, Physiology and Microbiology at UCM as Lecturer (*Profesor Ayudante Doctor*). In 2021 he was promoted to Assistant Professor (*Profesor Contratado Doctor*). He is the Principal Investigator of a research project funded by the Spanish State Research Agency (AEI, MCI) that focuses on understanding how environmental protozoa exert selective pressures for the acquisition and maintenance of virulence traits in bacteria. FA is a Topic Editor of the *Pathogens*, and Guest Editor of the *Microorganisms*, and serves as a reviewer of different journals and evaluator of international research grants and conferences in the field of environmental microbiology and infectious diseases, such as the Polish National Science Center and the ESCMID Research Grants (European Society for Clinical Microbiology and Infectious Diseases).



Part C. RELEVANT MERITS (sorted by typology)

C.1. Selected publications in the last 10 years

PEER-REVIEWED ARTICLES (last 10 years)

- 1- Morón A, Martín-González A, Díaz S, Gutiérrez JC, **Amaro F***. Autophagy and lipid droplets are a defense mechanism against toxic copper oxide nanotubes in the eukaryotic microbial model *Tetrahymena thermophila*. **Science of the Total Environment**. 2022 Nov 15;847(8):157580. doi: 10.1016/j.scitotenv.2022.157580. PMID: 35882336
- 2- Rodríguez-Martín, D, Murciano, A, Herrazi, M, de Francisco, P, Amaro, F., Gutiérrez JC, Martín-González, A., Díaz, S. 2022. Arsenate and arsenite differential toxicity in *Tetrahymena thermophila*. **Journal of Hazardous Materials**. 431:128532. doi: 10.1016/j.jhazmat.2022.128532
- 3- **Amaro, F.*** and Martín-González, A. 2021. Microbial warfare in the wild – the impact of protists on the evolution and virulence of bacterial pathogens. **International Microbiology**. 24(4):559-571. doi.org/10.1007/s10123-021-00192-y
- 4- **Amaro, F***, Morón, A., Díaz, S., Martín-González, A., Gutiérrez, JC. 2021. Metallic nanoparticles – friends or foes in the battle against antibiotic-resistant bacteria? **Microorganisms**. 9(2):364. doi.org/10.3390/microorganisms9020364
- 5- Peltomaa, R., **Amaro, F.**, Carrasco, S., Orellana, G., Benito-Peña, E., Moreno-Bondi, M.C. 2018. Homogeneous quenching immunoassay for Fumonisin B1 based on gold nanoparticles and an epitope-mimicking yellow fluorescent protein **ACS Nano**. 12(11):11333-11342).
- 6- De Francisco, P., **Amaro, F.**, Martín-González A., Gutiérrez, J.C. 2018. AP-1 (bZIP) Transcription Factors as Potential Regulators of Metallothionein Gene Expression in *Tetrahymena thermophila*. **Frontiers in Genetics**. 23;9:459. doi:10.3389/fgene.2018.00459
- 7- Burstein, D., **Amaro, F.**, Zusman, T., Lifshitz, Z., Cohen, O., Gilbert, J. Pupko, T., Shuman, H., and Segal, G. 2016. Genomic analysis of 38 *Legionella* species identifies large and diverse effector repertoires. **Nature Genetics**. 48(2):167-75. doi: 10.1038/ng.3481
- 8- Díaz S., Martín-González A., Cubas L., Ortega R., **Amaro F.**, Rodríguez-Martín D., Gutiérrez JC. 2016. High resistance of *Tetrahymena thermophila* to paraquat: Mitochondrial alterations, oxidative stress and antioxidant gene expression. **Chemosphere**. 144:909-917
- 9- **Amaro F.**, Wang, W., Gilbert, J., Anderson O.R., Shuman H.A. 2015. Diverse protist grazers select for virulence-related traits in *Legionella*. **ISME J**. 9(7): 1607-1618. doi:10.1038/ismej.2014.248
- 10- Gutiérrez, JC., **Amaro, F.** Martín-González, A. 2015. Heavy metal whole-cell biosensors using eukaryotic microorganisms: an updated critical review. **Frontiers in Microbiology** 6:48. doi: 10.3389/fmicb.2015.00048
- 11- Espart, A., Marín, M., Gil-Moreno, S., Palacios, O., **Amaro, F.**, Martín-González, A., Gutiérrez, J.C., Capdevilla, M., Atrian, S. 2015. Hints for metal-preference protein sequence determinants: different metal binding features of the five *Tetrahymena thermophila* metallothioneins. **Int. J. Biol. Sci.** 11(4);456-471
- 12- **Amaro, F.**, Turkewitz, A.P., Martín-González, A., Gutiérrez, JC. 2014. Functional GFP-metallothionein fusion protein from *Tetrahymena thermophila*: a potential whole-cell biosensor for monitoring heavy metal pollution and a cell model to study metallothionein overproduction effects. **Biometals**. 1: 195-205
- 13- **Amaro, F.**, Gilbert, J.A., Owens, S., Trimble, W., Shuman, H.A. 2012. Whole-genome sequence of the human pathogen *Legionella pneumophila* Serogroup 12 strain 570-CO-H. **J Bacteriol**. 194(6):1613-4.
- 14- Gutiérrez, JC., **Amaro, F.**, Díaz, S., de Francisco, P., Cubas, LL., Martín-González, A. 2011. Ciliate metallothioneins: unique microbial eukaryotic heavy-metal-binder molecules. **J. Biol. Inorg. Chem**. 16(7): 1025-1034



15- Amaro, F., Turkewitz, A.P., Martin-Gonzalez, A., Gutierrez, J.C. 2011. Whole-cell biosensors based on metallothionein promoters from the ciliate *Tetrahymena thermophila*: detecting bioavailable metals with high sensitivity. ***Microbial Biotechnology***. 4(4): 513-522

BOOK CHAPTERS (last 10 years):

1- Gutiérrez JC, **Amaro F.**, Díaz, S., Martín-González A. 2020. Environmental Biosensors: a microbiological view. In: Handbook of Cell Biosensors. Springer-Nature Switzerland. ISBN: 978-3-319-47405-2

2. **Amaro F.**, Shuman H. 2019. Selection of *Legionella* Virulence-Related Traits by Environmental Protozoa. In: Buchrieser C., Hilbi H. (eds) *Legionella*. Methods in Molecular Biology, vol 1921. Humana Press, New York, NY. ISBN 978-1-4939-9048-1

3. Gutiérrez, JC, de Francisco, P., **Amaro, F.**, Díaz, S, Martín-González, A. 2018. Structural and functional diversity of microbial metallothionein genes. In: *Microbial Diversity in the Genomic Era*. Eds. S. Das and HR Dash. Academic Press. ISBN 978-0-12-814849-5

4. 3- Gutiérrez JC., **Amaro F.**, Martín-González A. 2017. Microbial Biosensors for Metal(loid)s. En: *Microbial Ecotoxicology*. Ed: Springer-Nature. ISBN: 978-3-319-61794-7

C.2. Research projects

1- **Title:** *Mecanismos de selección de virulencia y persistencia bacteriana en el ambiente: interacciones bacteria-protistas*

Funding Institution: AEI-MCI (PID2020-113540GB-I00) **Duration:** 2021-2024.

Participation: Principal Investigator

2-**Title:** *Respuesta celular a nanopartículas metálicas: aplicaciones ambientales y biotecnológicas.*

Funding Institution: MINECO (CGL2016-75494-R) **Duration:** 2017-2020.

Participation: Member of the research group

PI: Juan Carlos Gutiérrez (Complutense University of Madrid)

3- **Title:** *El ciliado-modelo Tetrahymena thermophila como herramienta celular para el estudio de las interacciones metal pesado-célula eucariota.*

Funding Institution: Ministerio de Educación y Ciencia (CGL2008-00317/BOS)

Duration: 2008 - 2012

Participation: Member of the research group

PI: Juan Carlos Gutiérrez (Complutense University of Madrid)

4- **Title:** *Respuesta estrés frente a contaminantes ambientales en el protozoo-ciliado modelo Tetrahymena thermophila: Metalotioneínas, estrés oxidativo, biosensores celulares.*

Funding Institution: Ministerio de Educación y Ciencia (CGL2005-00548/BOS)

Duration: 2006- 2008

Participation: Member of the research group

PI: Juan Carlos Gutiérrez (Complutense University of Madrid)

5- **Title:** *Biosensores celulares para la detección de metales pesados.*

Funding Institution: UCM-CAM (CCG07-UCM/BIO-2508)

Participation: Member of the research group

PI: Juan Carlos Gutiérrez (Complutense University of Madrid)

6-. **Title:** *Caracterización y análisis de la expresión de algunos genes ligados a macrofagia inducida por estrés ambiental en el ciliado-modelo Tetrahymena thermophila.*

Funding Institution: UCM-CAM (CCG06-UCM/SAL-125)

Participation: Member of the research group

PI: Juan Carlos Gutiérrez (Complutense University of Madrid)



C.3. Contracts, technological or transfer merits

1- **Research project – Art. 83.** Title: *Desarrollo de ensayos microbiológicos para la monitorización de la eficacia microbicida de equipos de desinfección UVC/Ozono.*

Funding: EQUILAB, SL Duration: 25/02/2021 – 20/05/2022

PI: Francisco Amaro (Complutense University of Madrid)

2- **Aid for predoctoral researcher training contract (Ayuda para la contratación de un investigador predoctoral, Programa PEJD-Comunidad de Madrid)**

Funding Institution: Madrid Government (CAM). Reference: PEJD-2018-PRE/AMB-8757.

Tutor: F. Amaro. Predoctoral researcher: A. Morón. Duration: 1/03/2019 – 28/02/2018

3- **Postdoctoral Researcher.** 15/02/2018 – 31/05/2018

Funding Institution: Complutense University of Madrid

PI: G. Orellana (Complutense University of Madrid). *Convocatoria pública competitiva.*

4- **Postdoctoral Researcher.** 15/02/2017 – 14/02/2018

Funding Institution: Complutense University of Madrid

PI: G. Orellana (Complutense University of Madrid). *Convocatoria pública competitiva.*

C.4. Patents

1- **Title:** Photo-sterilizable medical device (Dispositivo médico foto-esterilizable).

Reference: PCT/EP2020/067991.

Date: 26/06/2020 **Priority country:** International. **Holder entity:** Complutense University

Authors: Orellana, G., Amaro, F., Gómez-Mendoza, M., Descalzo, A.B.

2-**Title:** Plasmid reporter construct pMTT1LucFF for heavy metal whole cell biosensors. **Reference:** ES2353784 B1

Date: 07/03/2011. **Priority countries:** Spain. **Holder entity:** Complutense University (UCM)

Authors: Gutiérrez, J.C., Amaro, F., Turkewitz, A.P., Martín-González, A.

3- **Title:** Plasmid reporter construct pMTT5LucFF for heavy metal whole cell biosensors. **Reference:** ES2354342 B1

Date: 07/03/2011. **Priority countries:** Spain. **Holder entity:** Complutense University (UCM)

Authors: Gutiérrez, J.C., Amaro, F., Turkewitz, A.P., Martín-González, A.

C.5. Fellowships and awards received

1- **Fulbright-Spanish M.E. Postdoctoral Fellowship.** 15/09/2010 – 14/09/2012

Funding Institution: Spanish Ministry of Education and Fulbright Commission

Center: Department of Microbiology – University of Chicago, Supervisor: H. Shuman

2- **Predocctoral fellowship – FPI UCM** 01/04/2005 – 01/04/2009

Funding Institution: Complutense University of Madrid

Center: Department of Microbiology III – UCM. Supervisor: J.C. Gutiérrez

4- **Beca de colaboración del Ministerio de Educación y Ciencia.** 2003-2004

Funding Institution: Spanish Ministry of Education

Center: Department of Microbiology III – UCM. Supervisor: J.C. Gutiérrez

C.6 Invited Lectures at Scientific Conferences

1. Authors: Amaro F., Wang W., Anderson O. R., y Shuman H. A.

Title: Prey or predator? The role of protists in the life cycle of *Legionella pneumophila*.

Conference: XXIV General Meeting of the Spanish Society for Microbiology (SEM) 2013

2. Authors: Amaro F., Turkewitz A., Martín-González A. y Gutiérrez J.C

Title: Tetrahymena as whole cell biosensors for metal biomonitoring

Conference: XXII General Meeting of the Spanish Society for Microbiology (SEM) 2009