

## Part A. PERSONAL INFORMATION

CV date	March 2025
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ARTIST PERSONAL INFORMATION			
First name	Carmen		
Family name	Michán		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	Bb2midoc@uco.es	URL Web	
Open Research and Contributor ID (ORCID)(*)		0000-0003-2921-0987	

(\*) Mandatory

### A.1. Current position

Position	Full Professor		
Initial date	24/03/2023		
Institution	Universidad de Córdoba		
Department/Center	<a href="#">Biochemistry and Molecular Biology</a>		
Country	Spain	Teleph. number	+34-957218286
Key words	Stress response, microorganisms, molecular biomarkers, pollution, oxidative stress, antioxidant enzymes, oxidative damage, redox proteomics, metaproteomics, metagenomics, wastewater, cancer		

### A.2. Previous positions (research activity interruptions, art. 45.2.c)

Period	Position/Institution/Country/Interruption cause
1988-1992	Pre- and post-doct fellow, E. E. del Zaidín, CSIC, Spain
1992-1994	Post-doct fellow, University of Birmingham, UK
1994-1997	Contratada Reincorporación, E. E. del Zaidín, CSIC, Spain
1997-2023	Contratada Reincorporación, Post-doct fellow, Associate professor, Assistant Prof. Universidad de Córdoba, Spain

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Biology degree	Universidad de Sevilla	1987
PhD in Sciences	Universidad de Granada	1991

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

68 publications in the Thomson Reuters Web of Science and 83 in Google scholar. 38 in Q1 and 13 in D1. 2003 citations, h-index 22, i10-index 37. 5 Research sections (tramos de investigación) and 1 Transfer section (tramo de transferencia). I have worked in different systems but always from a molecular perspective, integrating biochemical, molecular, genetic, and microbiological techniques. I did my doctoral thesis and a postdoctoral stage with Prof. JL Ramos at the Estación Experimental del Zaidín (CSIC) working on the study of the biodegradation of aromatic compounds by bacteria of the genus *Pseudomonas*. 2 short stays (with Prof. KN Timmis in Braunschweig, Germany, and with Prof. P. Williams in Bangor, Wales) and 1 long (with Prof. SWJ Busby in Birmingham, England). I joined the BIO187 group in the Department of Biochemistry and Molecular Biology (Universidad de Córdoba), to which I continue to belong. My interest was directed towards the mechanisms of cellular protection against aggression by oxidants, in bacteria (*E. coli*) first, and later in yeast/fungi (*S. cerevisiae*, *C. albicans*, and *D. hansenii*). My current work deals with: (a) the response to pollutants in complex aquatic systems, through redox proteomic patterns in multicellular organisms (e.g.,

bivalves), and metagenomic and metaproteomic analysis of the microorganisms present in water and sludge, and (b) microorganisms present in cancer, using metagenomics and metaproteomic techniques.

## Part C. RELEVANT MERITS (sorted by typology)

### C.1. Publications (see instructions) last 5 years

Siles JA, **Michán C** (2020) Bacteria, archae, fungi and viruses: it takes a community to eliminate waste. *Microb Biotechnol*, 13 (4): 892-894.

Bejaoui S, **Michán C**, Telahigue K, Nechi S, el Cafsi M, Soudani N, Blasco J, Costa PM, Alhama J (2020) Metal body burden and tissue oxidative status in the bivalve *Venerupis decussata* from Tunisian coastal lagoons. *Mar Environment Res*, 159: 105000.

Reyes J, Toledo M, **Michán C**, Siles JA, Alhama J, Martín MA (2020) Biofiltration of butyric acid: Monitoring odor abatement and microbial communities. *Environ Res* 190: 105000,

Ruiz-Castilla FJ, Bieber J, Caro G, **Michán C**, Sychrova H, Ramos J (2021) Regulation and activity of CaTrk1, CaAcu1 and CaHak1, the three plasma membrane potassium transporters in *Candida albicans*. *BBA Biomembranes*, 1863 (1): 183486.

**Michán C**, Blasco J, Alhama J (2021) High-throughput molecular analyses of microbiomes as a tool to monitor the wellbeing of aquatic environments. *Microb Biotechnol*, 14 (3): 870-885.

Amil-Ruiz F, Herruzo-Ruiz AM, Fuentes-Almagro CA, Baena-Angulo C, Jiménez-Pastor JM, Blasco J, Alhama J, **Michán C** (2021) Constructing a *de novo* transcriptome and a reference proteome for the bivalve *Scrobicularia plana*: Comparative analysis of different assembly strategies and proteomic analysis. *Genomics*, 113 (3) 1543-1553.

Ruiz-Castilla F, Rodríguez-Castro E, **Michán C**, Ramos J (2021) The potassium transporter Hak1 in *Candida albicans*, regulation and physiological effects at limiting potassium and under acidic conditions. *J Fungi*, 7, 362.

Márquez P, Herruzo-Ruiz AM, Siles JA, Alhama J, **Michán C**, Martín MA (2021) Influence of packing material on the biofiltration of butyric acid: A comparative study from a physico-chemical, olfactometric and microbiological perspective. *J Environ Manage*, 294, 113044

Herruzo-Ruiz AM, Fuentes-Almagro CA, Jiménez-Pastor JM, Pérez-Rosa VM, Blasco J, **Michán C**, Alhama J (2021) Metaomics evaluation of microbial community structure and activity for the environmental assessment of soils: Overcoming protein extraction pitfalls. *Environ Microbiol*, 23(8), 4706–4725.

**Michán C**, Michán-Doña A (2021) Viruses: Friends or Foes. *Microb Biotechnol*, 15(1), 88–90.

Alhama J, Maestre JP, Martín MA, **Michán C** (2022) Monitoring COVID-19 through SARS-CoV-2 quantification in wastewater: Progress, challenges and prospects. *Microb Biotechnol*, 15(6), 1719–1728.

Márquez P, Siles JA, Gutiérrez MC, Alhama J, **Michán C**, Martín MA (2022) A comparative study between the biofiltration for air contaminated with limonene or butyric acid using a combination of olfactometric, physico-chemical and genomic approaches. *Process Saf Environ Prot*, 160: 362-375.

Márquez P, Gutiérrez MC, Toledo M, Alhama J, **Michán C**, Martín MA (2022) Activated sludge process versus rotating biological contactors in WWTPs: Evaluating the influence of operation and sludge bacterial content on their odour impact. *Process Saf Environ Prot*, 160: 775-785.

Valenzuela-Molina F, Bura FI, Vázquez-Borrego MC, Granados-Rodríguez M, Rufián-Andujar B, Rufián-Peña S, Casado-Adam A, Sánchez-Hidalgo JM, Rodríguez-Ortíz L, Ortega-Salas R, Martínez-López A, **Michán C**, Alhama J, Arjona-Sanchez A, Romero-Ruiz A (2023)

Intraoperative oxygen tension and redox homeostasis in Pseudomyxoma peritonei: a short case series. *Front Oncol*, 13:1076500.

**Michán C** (2023) Picturing natural microbiomes: MALDI mass spectrometry imaging for unravelling the architecture of environmental microbial communities. *Environ Microbiol*, 25:135–136.

Casares-Jiménez M, García-García T, Suárez-Cárdenas JM, Pérez-Jiménez AB, Martín MA, Caballero-Gómez J, **Michán C**, Corona-Mata D, Risalde MA, Pérez-Valero I, García-Bocanegra I, Rivero A, Rivero-Juárez A, Garrido JJ (2023) Correlation of hepatitis E and rat hepatitis E viruses urban wastewater monitoring and clinical cases. *Sci. Total Environ*, 908: 168203.

Vázquez-Borrego MC, Granados-Rodríguez M, Bura FI, Martínez-López A, Rufián-Andújar B, Valenzuela-Molina F, Rodríguez-Ortiz L, Moreno-Serrano A, Ortega-Salas R, Pineda-Reyes R, **Michán C**, Alhama J, Romero-Ruiz A, Arjona-Sánchez A (2024) Antitumor effect of a small-molecule inhibitor of KRASG12D in xenograft models of mucinous appendicular neoplasms. *Exp Hematol Oncol*, 12:102.

Gutiérrez MC, Cáceres A, Herruzo-Ruiz AM, Siles JA, Vázquez F, Alhama J, **Michán C**, Martín MA (2024) Assessment of nitrification process in a sequencing batch reactor: Modelling and genomic approach *Environ Res*, 118035.

Herruzo-Ruiz AM, Peralbo-Molina A, López CM, **Michán C**, Alhama J, Chicano-Gálvez E (2024) Mass Spectrometry Imaging in Environmental Monitoring: from a scarce existing past to a promising future. *Trends Environ Anal Chem*, e00228.

Michán-Doña A, Vázquez-Borrego MC, **Michán C** (2024) Are there any completely sterile organs or tissues in the human body? Is there any sacred place? *Microb Biotechnol* 17 (3), e14442.

Granados-Rodríguez M, Bura FI, Valenzuela-Molina F, Rufián-Andújar B, Martínez-López A, Rodríguez-Ortiz L, Ortega-Salas R, Torres-Martínez M, Moreno-Serrano A, **Michán C**, Alhama J, Vázquez-Borrego MC, Arjona-Sánchez A, Romero-Ruiz A (2024) Breaking the mucin barrier: a new affinity chromatography-mass spectrometry approach to unveil potential cell markers and pathways altered in Pseudomyxoma peritonei. *Biol Proced Online*, 26: 13.

Herruzo-Ruiz AM, Trombini C, Moreno-Garrido I, Blasco J, Alhama J, **Michán C** (2024) Ions and nanoparticles of Ag and/or Cd metals in a model aquatic microcosm: effects on the abundance, diversity and functionality of the sediment bacteriome. *Mar Pollut Bull*, 204: 116525.

Martín MA, Serrano A, Rincón B, Gutiérrez MA, Amil-Ruiz F, Barbudo-Lunar M, Alhama J, **Michán C**, Siles JA (2024) Biomethanisation of sewage sludge: sonication pretreatment and monitoring of microbial communities. *Environ Technol Inno*, 36: 103750.

Herruzo-Ruiz AM, Trombini C, Sendra M, **Michán C**, Moreno-Garrido I, Alhama J, Blasco J (2024) Accumulation, biochemical responses and changes in the redox proteome promoted by Ag and Cd in the burrowing bivalve *Scrobicularia plana*. *Aquat Toxicol*, 276: 107123.

**Michán C**, Prados J, Ramos JL (2025) Bacteria as precision tools for cancer therapy. *Microb Biotechnol*, 18:e70090. E

## C.2. Congress

108 congress participations, 50 of those in international meetings

## C.3. Research projects (last 5 years)

Reciclando, reusando y reduciendo: Estrategias químicas, biológicas y energéticas para la sostenibilidad en el ciclo integral del agua. II Edición concurso Mares Circulares 2019. Fundación Chelonia. PI: MA Martín. 2020 (1 year). 5400 €.

Estrategias químicas, biológicas y energéticas para potenciar la sostenibilidad en el ciclo integral del agua y plantas de residuos sólidos urbanos. Ayudas a Proyectos de I+D+i Programa FEDER Andalucía 2014-2020. Junta de Andalucía (JA). Convocatoria 2018. PI: MA. Martín, **C Michán**. 2019 (2 years). 35000 €.

El microbioma ambiental: una herramienta para evaluar el impacto de los contaminantes clásicos y emergentes en áreas costeras. PID2019-110049RB-I00. MICINN. PI: J Blasco, J Alhama. 2020 (3 years). 150000 €.

Diagnostico global de un ecosistema acuático mediante la integración de técnicas multidisciplinares para establecer un mapa de riesgo. El río Guadalquivir, una oportunidad para la mejora de la gestión. P20\_00143. Proyectos de investigación orientados a los retos de la sociedad andaluza. JA. PI: J Alhama. 2021 (1.5 years). 94000 €.

Caracterización y validación de nuevas dianas de diagnóstico, de pronóstico y terapéuticas en Pseudomixoma peritoneal. PI22/01213. Proyectos de I+D+i en salud 2022. ISCIII. IP: A Arjona, A Romero. 2022 (3 years). 123420 €.

Validation of new therapeutic targets for a rare malignant disease: The Pseudomyxoma Peritonei. PRYES223170ARJO. AECC. IP: A Arjona. 2022 (3 years). 144801 €.

Red de Investigación sobre Vehículos autónomos e Inteligencia Artificial para la Monitorización de Recursos Hídricos (REINFORCED): Tecnología en Acción. Ayudas a la Constitución y Consolidación de Redes Temáticas. Universidad de Sevilla. PI: D Gutiérrez. 2023 (1 year). 4000 €.

Evaluación ecotoxicológica y multitrofica del riesgo ambiental asociado a los residuos metálicos de productos tecnológicos (Ewaste). PID2022-139807OB-I00. MICINN. PI: J Blasco. 2023 (3 years). 225000 €.

New tools for marine environmental monitoring: Omics, ARGs and chemical analysis of emerging and untargeted contaminants (OMICHEMAR). PCM\_00118. Plan Complementario de Ciencias Marinas y del Plan de Recuperación, Transformación y Resiliencia. JA. PI: J Blasco. 2023 (1.5 years). 248687.50 €.

#### C.4. Contracts, technological or transfer merits

##### Selected R&D contracts (last 5 years)

Detección cuantitativa del virus SARS-COV-2 en el agua residual de la red de saneamiento de Córdoba como indicador de alerta temprana de propagación de COVID-19. PI: JJ Garrido, **C Michán**, MA Martín. 2020 (3 years). 396942.48 €.

Servicio de asesoramiento, transferencia, capacitación y optimización de las técnicas analíticas y metodologías necesarias para la determinación de SARS COV 2 en aguas y lodos, en los laboratorios de EMASESA. PI: **C Michán**, MA Martín. 2020 (6 months). 48027.04€.

##### Others

Reviewer of the National Agency for Evaluation and Foresight (ANEP).

Member of the "Editorial Board" of the journal Microbial Biotechnology (Q1, Microbiology and Applied Microbiology) since 2010.

Editor of "Highlights" in the journal Microbial Biotechnology (Q1, Microbiology and Applied Microbiology) since 2018.