



Multidisciplinary Microbiology Group

➤ **Group Members**

***Leader group:** MD PhD María Tomás (Webs: <https://www.mariatomas.me/>; <https://www.inibic.org>).

The team of Dr. Maria Tomás (<http://www.mariatomas.me/>) is made up of 10 people who belong to the CHUAC microbiology department (made up of 50 people) as well as the research institute, INIBIC (Biomedical Research Institute). She is a researcher at the Spanish Network for Research in Infectious Diseases (REIPI), a member of the board of directors of the Spanish Society of Microbiology and Infectious Diseases (SEIMC) as well as a Spanish representative of the European Union of Specialist Doctors (UEMS). She has made 85 publications (87 first quartile) in peer-reviewed journals indexed in Web of Science, > 12,529 citations, h factor = 35; ii) Director of 3 defended doctoral theses; she currently supervises 5 PhD students at INIBIC-CHUAC; iii) 9 Projects as Principal Investigator (PI) of which 4 research projects and 5 innovation projects and iv) 3 Patents on clinical microbiology diagnosis, 2 international (PCT / EP2017 / 069849 and Argentina, 19083725) and a national patent (Spain, ES2449665); iv) Evaluator of national and international projects. In addition, she is an associate editor of high impact factor international magazines. Finally, she participates as an evaluator of national (Call for Strategic Action in Health-ISCIII) and European research projects.

***Post-doctoral researchers:**

a.1) PhD Lucia Blasco, researcher hired through the FIS PI19 / 00878 Project (ISCIII, Ministry of Science and Innovation, 2020-2024).

<https://orcid.org/0000-0002-4039-4142/>

a.2) PhD María López, researcher hired by the Galician Innovation Agency, GAIN (2019-2022).

<https://orcid.org/0000-0003-4217-3295/>

a.3) PhD Laura Fernández, researcher hired by the Galician Innovation Agency, GAIN (2021-2024).

<https://orcid.org/0000-0002-8531-6105/>

a.4) PhD Mónica González-Bardanca, researcher hired through the Río Hortega contract (ISCIII, Ministry of Science and Innovation, 2021-2023).

<https://orcid.org/0000-0002-4039-4142/>

*Pre-doctoral researchers:

b.1) Ms. Ines Bleriot, researcher hired through the pre-doctoral contract p-FIS (ISCIII, Ministry of Science and Innovation, 2021-2025).

<https://orcid.org/0000-0002-1846-4693/>

b.2) Ms. Olga Pacios, researcher hired by the Galician Innovation Agency GAIN (2020-2023).

<https://orcid.org/0000-0002-4476-856X/>

b.3) Mr. Antón Ambroa, researcher hired through the SEIMC project (www.seimc.org) (2018-2022).

<https://orcid.org/0000-0002-3225-2553>

b.4) Ms. Concha Ortiz, researcher hired through the GAIN project (2021-2023).

<https://orcid.org/0000-0001-6632-1454/>

➤ **Research topics**

A. Study of new **molecular diagnostic techniques**

B. Analysis of molecular mechanisms of tolerance and bacterial persistence in search of **new therapeutic targets**

C. Improvement of anti-infective therapies such as **phage therapy** and anti-virulent

➤ **Research articles**

1. Pacios O, Fernández-García L, Bleriot I, Blasco L, González-Bardanca M, López M, Fernández-Cuenca F, Oteo J, Pascual Á, Martínez-Martínez L, Domingo-Calap P, Bou G, **Tomás M***; Study Group on Mechanisms of Action and Resistance to Antimicrobials (GEMARA) on behalf of the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC). «*Enhanced Antibacterial Activity of Repurposed Mitomycin C and Imipenem in Combination with the Lytic Phage vB_KpnM-VAC13 against Clinical Isolates of Klebsiella pneumoniae*». Antimicrob Agents Chemother. 2021 Aug 17;65(9):e0090021. Epub 2021 Aug 17. PMID: 34228538;

2. Blasco L, Ambroa A, Trastoy R, Bleriot I, Moscoso M, Fernández-García L, Perez-Nadales E, Fernández-Cuenca F, Torre-Cisneros J, Oteo-Iglesias J, Oliver A, Canton R, Kidd T, Navarro F, Miró E, Pascual A, Bou G, Martínez-Martínez L, **Tomas M***. «*In vitro and in vivo efficacy of combinations of colistin and different endolysins against clinical strains of multi-drug resistant pathogens*». Sci Rep. 2020 Apr 28;10(1):7163. PMID: 32346029;

3. Bleriot I, Trastoy R, Blasco L, Fernández-Cuenca F, Ambroa A, Fernández-García L, Pacios O, Perez-Nadales E, Torre-Cisneros J, Oteo-Iglesias J, Navarro F, Miró E, Pascual A, Bou G, Martínez-Martínez L, **Tomas M***. «*Genomic analysis of 40 prophages located in the genomes of 16 carbapenemase-producing clinical strains of Klebsiella pneumoniae*». Microb Genom. 2020 May;6(5):e000369. Epub 2020 Apr 29. PMID: 32375972;

4. Ambroa A, Blasco L, López-Causapé C, Trastoy R, Fernandez-García L, Bleriot I, Ponce-Alonso M, Pacios O, López M, Cantón R, Kidd TJ, Bou G, Oliver A, Tomás M*. «*Temperate Bacteriophages (Prophages) in Pseudomonas aeruginosa Isolates Belonging to the International Cystic Fibrosis Clone (CC274)*». Front Microbiol. 2020 Sep 25;11:556706. PMID: 33101229;
5. Hamidian M, Blasco L, Tillman LN, To J, Tomas M*, Myers GSA. «*Analysis of Complete Genome Sequence of Acinetobacter baumannii Strain ATCC 19606 Reveals Novel Mobile Genetic Elements and Novel Prophage*». Microorganisms. 2020 Nov 24;8(12):1851. PMID: 33255319;
6. Blasco L, Ambroa A, Lopez M, Fernandez-Garcia L, Bleriot I, Trastoy R, Ramos-Vivas J, Coenye T, Fernandez-Cuenca F, Vila J, Martinez-Martinez L, Rodriguez-Baño J, Pascual A, Cisneros JM, Pachon J, Bou G, Tomás M*. «*Combined Use of the Ab105-2φΔCI Lytic Mutant Phage and Different Antibiotics in Clinical Isolates of Multi-Resistant Acinetobacter baumannii*». Microorganisms. 2019 Nov 12;7(11):556. PMID: 31726694;
7. López M, Rueda A, Florido JP, Blasco L, Fernández-García L, Trastoy R, Fernández-Cuenca F, Martínez-Martínez L, Vila J, Pascual A, Bou G, Tomás M*. «*Evolution of the Quorum network and the mobilome (plasmids and bacteriophages) in clinical strains of Acinetobacter baumannii during a decade*». Sci Rep. 2018 Feb 6;8(1):2523. PMID: 29410443;
8. González de Aledo M, González-Bardanca M, Blasco L, Pacios O, Bleriot I, Fernández-García L, Fernández-Quejo M, López M, Bou G, Tomás M*. «*CRISPR-Cas, a Revolution in the Treatment and Study of ESKAPE Infections: Pre-Clinical Studies*». Antibiotics (Basel). 2021 Jun 22;10(7):756. PMID: 34206474;
9. Pacios O, Blasco L, Bleriot I, Fernandez-Garcia L, González Bardanca M, Ambroa A, López M, Bou G, Tomás M*. «*Strategies to Combat Multidrug-Resistant and Persistent Infectious Diseases*». Antibiotics (Basel). 2020 Feb 6;9(2):65. PMID: 32041137;
10. Fernandez-García L, Pacios O, González-Bardanca M, Blasco L, Bleriot I, Ambroa A, López M, Bou G, Tomás M*. «*Viral Related Tools against SARS-CoV-2*». Viruses. 2020 Oct 16;12(10):1172. PMID: 33081350;
11. González de Aledo M, González-Bardanca M, Blasco L, Pacios O, Bleriot I, Fernández-García L, Fernández-Quejo M, López M, Bou G, Tomás M. «*CRISPR-Cas, a Revolution in the Treatment and Study of ESKAPE Infections: Pre-Clinical Studies. Antibiotics (Basel)*». 2021 Jun 22;10(7):756. PMID: 34206474;
12. Pacios O, Fernández-García L, Bleriot I, Blasco L, González-Bardanca M, López M, Fernández-Cuenca F, Oteo J, Pascual Á, Martínez-Martínez L, Domingo-Calap P, Bou G, Tomás M; Study Group on Mechanisms of Action and Resistance to Antimicrobials (GEMARA) on behalf of the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC). «*Enhanced Antibacterial Activity of Repurposed Mitomycin C and Imipenem in Combination with the Lytic Phage vB_KpnM-VAC13 against Clinical Isolates of Klebsiella pneumoniae*». Antimicrob Agents Chemother. 2021 Aug 17;65(9):e0090021. 2021 Aug 17. PMID: 34228538;

➤ **Research projects**

1. Title: «**CRISPR-CAS: Innovation in the diagnosis of infectious diseases**» Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: GAIN, Galician Innovation Agency

Duration: 03/01 / 2022-03 / 03/2025

Principal Investigator: María del Mar Tomás Carmona

2. Title: «**Artificial Intelligence vs. Covid-19: improvements in the detection, evaluation and personalized monitoring of those affected**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: GAIN, Galician Innovation Agency

Duration: 21/12 / 2020-14 / 03/2022

Principal Investigators: María del Mar Tomás Carmona and Marcos Ortega Hortas

3. Title: «**Anti-tolerance and/or anti-bacterial persistence treatments: Keys to the fight against resistant bacteria. Exp. PI19.00878**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC);

Funding agency: Instituto de Salud Carlos III (ISCIII).

Duration: 03/02 / 2020-03 / 01/2022.

Principal Investigator: María del Mar Tomás Carmona.

4. Title: «**Innovation in Phage Therapy for the decolonization of carriers of Enterobacteriaceae ESBL in the community**».

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC);

Funding agency: SEIMC, Spanish Society for Infectious Diseases and Clinical Microbiology;

Duration: 06/14 / 2018-2020.

Coordinator: María del Mar Tomás Carmona.

5. Title: «**Phage Therapy: New Challenges. Exp. PI16 / 01163**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: Instituto de Salud Carlos III (ISCIII)

Duration: 01/01 / 2017-31 / 12/2019

Principal Investigator: María del Mar Tomás Carmona

6. Title: «**Phage Endolysins: Clinical Application, PRIS-II**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: ACIS, Health Knowledge Agency

Duration: 08/06 / 2017-01 / 02/2018

Principal Investigator: María del Mar Tomás Carmona

7. Title: «**Development of molecular kits: Genomic Diagnostic Platform**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: Foundation for Prospective Innovation in Health in Spain, FIPSE;

Duration: 03/01/2017 - 10/06/2017.

Principal Investigator: María del Mar Tomás Carmona.

8. Title: «**Relationship between Quorum Sensing (QS) and resistance mechanisms in nosocomial pathogens: New Therapies. Exp PI13 / 02390**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: Instituto de Salud Carlos III (ISCIII)

Duration: 01/01 / 2014-30 / 09/2017

Principal Investigator: María del Mar Tomás Carmona.

9. Title: «**II Spanish Study of Colonizations / Infections by Acinetobacter baumannii. Clinical and Molecular Epidemiology. GEIH-REIPI Ab 2010 study (PI10 / 00056)**»

Institution: A Coruña Biomedical Research Institute (INIBIC-CHUAC)

Funding agency: Instituto de Salud Carlos III (ISCIII)

Duration: 01/01 / 2010-30 / 09/2014

Principal Investigator: Maria del Mar Tomas Carmona

➤ **Doctoral Thesis**

1) **DEFENDED THESES**

1.a) Mr. Carlos Rumbo «**Molecular analysis of factors associated with the successful pathogen *Acinetobacter baumannii*: resistance and virulence**». 2011-2014. University of A Coruña. INIBIC-Hospital of A Coruña. Directors: Dr. German Bou and Dra. María del Mar Tomás. Extraordinary Award.

1.b) Ms. María López «**Study of the detection of quorum in *Acinetobacter baumannii*: clinical characteristics**». 2013-2017. University of A Coruña. INIBIC-Hospital of A Coruña. Director: Dra. María del Mar Tomás.

1.c) Ms. Laura Fernández-García «**Toxin-antitoxin and Quorum Sensing systems in *Acinetobacter spp*: Molecular targets for the development of new anti-infective treatments**». 2015-2019. University of A Coruña. INIBIC-CHUAC. Director: Dra. María del Mar Tomás. International Mention.

2) **THESIS IN PREPARATION (All with International Mention)**

2.a) D. Antón Ambroa «**Study of the lysogenic phages and their potential applications in clinical strains of multi-drug resistant bacteria**». 2017-2021. University of A Coruña. INIBIC-CHUAC. Directors: Ms. Lucia Blasco and Dr. María del Mar Tomás.

2.b) Ms. Inés Bleriot «**Studies of the molecular mechanisms associated with bacterial tolerance, persistence and resistance: new treatment pathways**». 2019-2023. University of A Coruña. INIBIC-CHUAC. Directors: Ms. Lucia Blasco and Dra. María del Mar Tomás.

2.c) Ms. Olga Pacios 2019-2024 «**Application of innovative treatments against resistant, persistent and antimicrobial-tolerant bacteria**». 2020-2024. University of A Coruña. INIBIC-CHUAC. Director: Dra. María del Mar Tomás.

2.d) Ms. Concha Ortiz 2021-2025 "**CRISPR-Cas innovations in infection diseases**". 2021-2025. University of A Coruña. INIBIC-CHUAC. Director: Dra. María del Mar Tomás.