

3.3.2 Molecular Microbiology Group

Publications: **36**

Q1: **17**

COMPOSITION

Jesús Mingorance Cruz. Investigador Senior (Contrato Ramón y Cajal - I3). FIBHULP

Emilio Cedejas Bueno. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

Eliás Dahdouh. Investigador Postdoctoral. Hospital Universitario La Paz

Silvia García Bujalance. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

María Jesús García García. Profesor Titular del Departamento de Medicina Preventiva y Salud Pública y Microbiología. Facultad de Medicina. Universidad Autónoma de Madrid

Julio García Rodríguez. Jefe de Servicio de Microbiología. Hospital Universitario La Paz

Paulino Gómez Puertas. Científico Titular CSIC. CBM "Severo Ochoa". Profesor Honorario. Universidad Autónoma de Madrid

María Rosa Gómez-Gil Mira. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

Sonia Jiménez Rodríguez. Técnico de Laboratorio. FIBHULP

Fernando Lázaro Perona. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

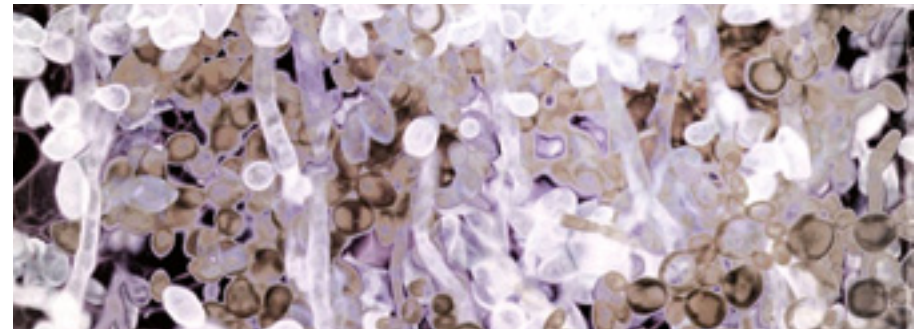
María Belén Loeches Yagüe. Médico Adjunto. Unidad de Enfermedades Infecciosas. Hospital Universitario La Paz

Carmen Menéndez Gómez. Profesora Honoraria del Departamento de Medicina Preventiva y Salud Pública y Microbiología. Facultad de Medicina. Universidad Autónoma de Madrid

Dolores Montero Vega. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

Arturo Noguero Asensio. Jefe de Servicio de Medicina Interna. Hospital de Cantoblanco - Hospital Universitario La Paz

Verónica Pérez Blanco. Facultativo Especialista de Área en Medicina Preventiva. Hospital Universitario La Paz



Rafael Carlos Prados Rosales. Investigadora Postdoctoral. Universidad Autónoma de Madrid

María Inmaculada Quiles Melero. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

Alicia Rico Nieto. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

Guillermo Ruiz Carrascoso. Facultativo Especialista de Área en Microbiología. Hospital Universitario La Paz

Carlos Toro Rueda. Facultativo Especialista de Área en Microbiología. Hospital Carlos III-Hospital Universitario La Paz

STRATEGIC OBJECTIVE

The Molecular Microbiology research group is integrated into the Department of Microbiology at Hospital La Paz, and a significant number of its members are physicians in the department devoted to microbiological diagnostic work. This integration determines the group's strategic approach and therefore, the different lines of research revolve around several aspects of clinical microbiology and infectious diseases.

An important line of activity (Clinical Microbiology) is the result of the routine activities provi-

ded by the department, but goes further and deeper into the methodological, epidemiological and pathological challenges encountered in the daily routine.

One research line derived from the former is the development of methods for the molecular characterisation of pathogenic microorganisms, including microbiological diagnosis and epidemiological analysis, and more recently, microbial genomics.

Another line focuses on the study of the evolution of pathogenic microorganisms. As a model



of opportunistic pathogens, we study *Escherichia coli*, a microorganism that is well characterised at the genetic level and that is clinically relevant as the primary cause of urinary tract infections and one of the most frequently involved in bacteraemia.

Another important focus, given the scarcity of new antibiotics, is the search for new molecules.

In this line, we use molecular dynamics to search for new metallo-beta-lactamase inhibitors.

Several group members belong to the Faculty of Medicine and they have a long research record in the Molecular Biology and Pathogenesis of *Mycobacterium tuberculosis* and other mycobacteria.

RESEARCH LINES

- Molecular epidemiology and evolution of pathogens
- Molecular methods for diagnostics of infectious diseases
- Microbial genomics

- Design of new inhibitors of metallo-beta-lactamases by molecular dynamics
- Clinical Microbiology
- Molecular Biology and Pathog

RESEARCH ACTIVITY

● Publications

- Acero LA, Vicente EJ, Cudós ES, Gómez MPR. Varicella monoarthritis in an immunocompetent woman. *Enferm Infect Micr Cl.* 2022; 40(2): 93-4. Letter. IF: 2.5; Q4
- Aguilera-Alonso D, Nieto SK, Montojo MFA, Santaeufemia FJS, Saavedra-Lozano J, Soto B, Camiño MB, Berzosa A, Tato LP, Cercenado E, Tagarro A, Arana DM, Sanz MA, Gómez MPR, Sánchez FC, Baquero-Artigao F. *Staphylococcus aureus* community-acquired pneumonia in children after 13-valent pneumococcal vaccination (2008-2018): Epidemiology, clinical characteristics and outcomes. *Pediatr Infect Dis J.* 2022; 41(5): e235-42. Article. IF: 3.6; Q1
- Alebouyeh S, Cárdenas-Pestaña JA, Vázquez L, Prados-Rosales R, del Portillo P, Sanz J, Menéndez MC, García MJ. Iron deprivation enhances transcriptional responses to in vitro growth arrest of *Mycobacterium tuberculosis*. *Front Microbiol.* 2022; 13: 956602. Article. IF: 5.2; Q2
- Alebouyeh S, Weinrick B, Achkar JM, García MJ, Prados-Rosales R. Feasibility of novel approaches to detect viable *Mycobacterium tuberculosis* within the spectrum of the tuberculosis disease. *Front Med (Lausanne).* 2022; 9: 965359. Review. IF: 3.9; Q2
- Betrian S, Ángeles MA, Moreno AG, Cabarro B, Deslandres M, Ferrón G, Mery E, Floquet A, Guyon F, Pérez-Benavente A, Spagnolo E, Rychlik A, Gladieff L, Gutiérrez AH, Martínez A. Survival impact of histological response to neoadjuvant chemotherapy

according to number of cycles in patients with advanced ovarian cancer. *Int J Gynecol Cancer.* 2022; 32(8): 967-74. Article. IF: 4.8; Q1

- Boria F, Chiva L, Carbonell M, Gutiérrez M, Sancho L, Alcázar A, Coronado M, Gutiérrez AH, Zapardiel I. F-18-fluorodeoxyglucose positron emission tomography/computed tomography (F-18-FDG PET/CT) predictive score for complete resection in primary cytoreductive surgery. *Int J Gynecol Cancer.* 2022; 32(11): 1427-32. Article. IF: 4.8; Q1
- Bouza E, Arribas JR, Alejos B, Bernardino JI, Coiras M, Coll P, del Romero J, Fuster MJ, Górgolas M, Gutiérrez A, Gracia D, Hernando V, Martínez-Picado J, Sesmero JMM, Martínez E, Moreno S, Mothe B, Navarro ML, Podzamczar D, Pulido F, Ramos JT, Ruiz-Mateos E, García IS, Palomo E. Past and future of HIV infection. A document based on expert opinion. *Rev Esp Quim.* 2022; 35(2): 131-56. Review. IF: 1.9; Q4
- Buckley RD, Díaz-Menéndez M, García-Rodríguez J, Arribas JR. Seasonal coronavirus pneumonia after SARS-CoV-2 infection and vaccination: New frenemies?. *J Infect Dis.* 2022; 225(4): 741-3. Letter. IF: 6.4; Q1
- Cabello-Úbeda A, de Quirós JCLB, Carbonero LM, Sanz J, Vergas J, Mena A, Torralba M, Segurado MH, Pinto A, Tejerina F, Palmier E, Gutiérrez A, Vázquez P, Pulido F, Górgolas M. 48-Week effectiveness and tolerability of dolutegravir (DTG) plus lamivudine (3TC) in antiretroviral-naïve adults living with HIV: A multicenter real-life cohort. *Plos*

One. 2022; 17(11): e0277606. Article. IF: 3.7; Q2

- Cendejas-Bueno E, Romero-Gómez MD, Falces-Romero I, Aranda-Díaz A, García-Ballesteros D, Mingorance J, García-Rodríguez J. Evaluation of a lateral flow immunoassay to detect CTX-M extended-spectrum ss-lactamases (ESBL) directly from positive blood cultures for its potential use in Antimicrobial Stewardship programs. *Rev Esp Quim.* 2022; 35(3): 284-7. Article. IF: 1.9; Q4
- Clemente PG, Romero-Gómez MP, García-Rodríguez J, Cendejas-Bueno E. Optimized identification of microorganisms directly from positive blood cultures by MALDI-TOF to improve antimicrobial treatment. *Rev Esp Quim.* 2022; 35(4): 362-9. Article. IF: 1.9; Q4
- Cumplido-Trasmonte C, Ramos-Rojas J, Delgado-Castillejo E, Garcés-Castellote E, Puyuelo-Quintana G, Destarac-Eguizabal MA, Barquín-Santos E, Plaza-Flores A, Hernández-Melero M, Gutiérrez-Ayala A, Martínez-Moreno M, García-Armada E. Effects of ATLAS 2030 gait exoskeleton on strength and range of motion in children with spinal muscular atrophy II: a case series. *J Neuroeng Rehabil.* 2022; 19(1): 75. Article. IF: 5.1; D1
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- de la Haba-Rodríguez J, Lloret FF, Salgado MAV, Arce MO, Gutiérrez AC, Jiménez JGD, Zambraño CB, Alonso RMR, López RL, Salas NR. SEOM-GETTHI clinical guideline for the practical management of molecular platforms (2021). *Clin Transl Oncol.* 2022; 24(4): 693-702. Article. IF: 3.4; Q3
- Falces-Romero I, Román-Hernández C, Schuffelmann-Gutiérrez C, Laplaza-González M, Escosa-García L, Bloise I, Romero-Gómez MP, Verdú-Sánchez C, Calderon-Llopis B, Amores-Hernández I, Gómez-Zamora A, Río-García M, Menéndez-Suso JJ, Rodríguez-Álvarez D, Pérez-Acosta E, Rodríguez-Rubio M, Álvarez-Rojas E, de la Oliva P, Mingorance J, Martínez-Romillo PD, García-Rodríguez J, Cendejas-Bueno E. Molecular diagnosis of bacteremia in a pediatric intensive care unit: a step forward. *Future Microbiol.* 2022; 17(7): 505-10. Article. IF: 3.1; Q3
- Fernández-Justel D, Marcos-Alcalde I, Abascal F, Vidana N, Gómez-Puertas P, Jiménez A, Revuelta JL, Buey RM. Diversity of mechanisms to control bacterial GTP homeostasis by the mutually exclusive binding of adenine and guanine nucleotides to IMP dehydrogenase. *Protein Sci.* 2022; 31(5): e4314. Article. IF: 8; Q1
- Gallego A, Mendiola M, Hernando B, Berjón A, Cádiz A, Chaves-Urbano B, Heredia-Soto V, Spagnolo E, Gutiérrez AH, Hardisson D, Macintyre G, Redondo A, García MJ. Prognostic markers of inflammation in endometrioid and clear cell ovarian cancer. *Int J Gynecol Cancer.* 2022; 32(8): 1009-16. Article. IF: 4.8; Q1



1 Introduction

2 Executive Summary

3 Information Groups by Area

4 Associated Clinicians

- García-Morales L, del Portillo P, Anzola JM, Ares MA, Helguera-Repetto AC, Cerna-Cortes JF, Méndez-Tenorio A, García MJ, Ota I, Martín C, González-y-Merchand JA, Rivera-Gutiérrez S. The lack of the TetR-like repressor gene BCG_2177c (Rv2160A) may help mycobacteria overcome intracellular redox stress and survive longer inside macrophages when surrounded by a lipid environment. *Front Cell Infect Mi.* 2022; 12: 907890. Article. IF: 5.7; Q1
- Gutiérrez A, Zapater P, Ricart E, González-Vivo M, Gordillo J, Olivares D, Vera I, Manosa M, Gisbert JP, Aguas M, Sánchez-Rodríguez E, Bosca-Watts M, Laredo V, Camps B, Marín-Jiménez I, Zabana Y, Martín-Arranz MD, Muñoz R, Navarro M, Sierra E, Madero L, Vela M, Pérez-Calle JL, Sainz E, Calvet X, Arias L, Morales V, Bermejo F, Fernández-Salazar L, Van Domselaar M, de Castro L, Rodríguez C, Muñoz-Villafraña C, Lorente R, Rivero M, Iglesias E, Herreros B, Busquets D, Riera J, Martínez-Montiel MP, Roldon M, Roncero O, Hinojosa E, Sierra M, Barrio J, de Francisco R, Huguet J, Merino O, Carpio D, Mu-

ñoz F, Marta P, Almela P, Argueelles-Arias F, Alcaín G, Luis B, Mancenido N, Lucendo AJ, Varela P, Rodríguez-Lago I, Ramos L, Laura S, Sese E, Acosta MBD, Domenech E, Frances R. Immigrant IBD patients in Spain are younger, have more extraintestinal manifestations and use more biologics than native patients. *Front Med (Lausanne).* 2022; 9: 823900. Article. IF: 3.9; Q2

- Larraga-García B, Quintana-Díaz M, Gutiérrez A. Simulation-based education in trauma management: a scoping review. *Int J Env Res Pub He.* 2022; 19(20): 13546. Review. IF: 2.468; Q2
- Lázaro-Perona F, Dahdouh E, Sotillo A, Pérez-Blanco V, Villa J, Viedma E, Ruiz-Carrascoso G, Mingorance J. Dissemination of a single ST11 clone of OXA-48-producing *Klebsiella pneumoniae* within a large polyclonal hospital outbreak determined by genomic sequencing. *Microb Genom.* 2022; 8(4): 808. Article. IF: 3.9; Q2
- López GVG, Tejedor MR, Gómez MD, Castellano MS, Pollán BD, Loidi JC, Mora M, Mingorance J, Buckley RD. Pacemaker pocket infection by *Neocardia carnea*. First case description and literatur-

re review. *Microbes Infect.* 2022; 24(4): 104944. Review. IF: 5.8; Q1

- Maldonado-Barrueco A, García-Rodríguez J, Yániz-Ramírez J, Serrano-Vaquero I, Parra-Alonso JC, Vega-Nieto C, Ruiz-Carrascoso G. Impact of the SARS-CoV-2 pandemic on the prevalence and incidence of gastrointestinal viruses in children up to five years old: a retrospective cohort study. *Microbiol Spectr.* 2022; 10(3): e0266921. Article. IF: 3.7; Q2
- Maldonado-Barrueco A, Grandioso-Vas D, Rico-Nieto A, García-Rodríguez J, García-Bujalance S. Closing brief case: proteus mirabilis causing coraliform lithiasis and bacteremia in an elderly catheterized patient. *J Clin Microbiol.* 2022; 60(10): e02414-21. Editorial Material. IF: 9.4; Q1
- Migliorini LB, Leaden L, de Sales RO, Correa NP, Marins MM, Koga PCM, Toniolo AD, de Menezes FG, Martino MD, Mingorance J, Severino P. The gastrointestinal load of carbapenem-resistant enterobacteriaceae is associated with the transition from colonization to infection by *klebsiella pneumoniae* isolates harboring the bla(KPC) Gene.

Front Cell Infect Mi. 2022; 12: 928578. Article. IF: 5.7; Q1

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- Montejano R, Marcelo C, Falces-Romero I, del Valle LG, de Soto T, García-Rodríguez J, Arribas JR. Efficacy of sotrovimab for persistent coronavirus disease-2019 in a severely immunocompromised person living with HIV. *Aids.* 2022; 36(5): 751-3. Letter. IF: 3.8; Q3
- Navarro-Carrera P, García-Clemente P, Gómez-Gil R, Cáceres-Sánchez R, Bloise I, Dahdouh E, Moreno-Ramos F, García-Rodríguez J, Mingorance J, Lázaro-Perona F. Resistance to meropenem-vaborbactam in clinical isolates of *Enterobacter roggenkampii* without previous exposure to vaborbactam. *Clin Microbiol Infect.* 2022; 28(12): 1662-64. Letter. IF: 14.2; D1
- Navarro-Carrera P, García-Clemente P, Lázaro-Perona F, Rodríguez JG, Mingorance J, Cendejas-Bueno E. Detection and characterization of two methicillin- and cefoxitin-susceptible *mecA* plus *Staphylococcus aureus* isolates from blood cultures of two adult patients. *J Glob Antimicrob Resist.* 2022; 31: 353-4. Letter. IF: 4.6; Q2
- Pollán BD, López GVG, Clemente PMG, González MJ, Bujalance SG, Mira MRGG. Urinary tract infections in hospitalized COVID-19 patients, what's up, doc?. *J Clin Med.* 2022; 11(7): 1815. Article. IF: 3.9; Q2
- Ruiz-Llobet A, Gassiot S, Sarrate E, Zubizaray J, Dapena JL, Rives S, Sevilla J, López AM, Romero MP, Montoya C, Vagace JM, Hurtado JRM, García-Morin M, Abos MG, Sánchez MCM, Lendinez F, Moraleda PP, Tallón M, González B, Urrutia E, Serna JV, Pleguezuelos IP, Merino MM, Elbal ER, Orellana E, Muñoz HB, Berruero R. Venous thromboembolism in pediatric patients with acute lymphoblastic leukemia under chemotherapy treatment. Risk factors and usefulness of thromboprophylaxis. Results of LAL-SEHOP-PETHEMA-2013. *J Thromb Haemost.* 2022; 20(6): 1390-9. Article. IF: 10.4; D1
- Sánchez PG, la Calle MDV, Gómez MPR, Bujalan-





ce SG, Rey CC. Association between febrile seizures and enterovirus and parechovirus infection in the emergency room: A pilot study. *An Pediatr*. 2022; 96(5): 456-8. Letter. IF: 2.1; Q3

- Sanz-Jiménez A, Malvar O, Ruz JJ, García-López S, Kosaka PM, Gil-Santos E, Cano A, Papanastasiou D, Kounadis D, Mingorance J, Paulo AS, Calleja M, Tamayo J. High-throughput determination of dry mass of single bacterial cells by ultrathin membrane resonators. *Commun Biol*. 2022; 5(1): 1227. Article. IF: 5.9; Q1
- Schirmer S, Rauh L, Alebouyeh S, Delgado-Velandia M, Salgueiro VC, Lerma L, Serrano-Mestre JL, Azkargorta M, Elortza F, Lavin JL, García MJ, Fernández MTT, Gola S, Prados-Rosales R. Immunogenicity of mycobacterial extracellular vesicles isolated from host-related conditions informs about tuberculosis disease status. *Front Microbiol*. 2022; 13: 907296. Article. IF: 5.2; Q2
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● Research projects

Cendejas Bueno E. Desarrollo y validación de métodos para la detección y cuantificación de antifúngicos sistémicos en suero mediante MALDI-tof (PI17/01444). ISCIII. 2018-2022.

Management centre: FIBHULP

Dahdouh E. Alianza para la exploración de inhibidores de carbapenemasas (AC20/00012). ISCIII. 2021-2022.

Management centre: FIBHULP

Dahdouh E. Ayuda adicional - Contrato Juan de la Cierva (IJC2019-038832-I). Ministerio de Ciencia Innovación. 2021-2023.

Management centre: FIBHULP

García Bujalance S. Evaluación del rendimiento del ensayo aptima HIV-1 quant para la detección y cuantificación del HIV-1 en muestras de plasma. Hologic Deutschland GMBH. 2016-Ongoing.

Management centre: FIBHULP

García García MJ. Latencia y adaptación: papel de mycobacterium tuberculosis silente en la enfermedad (PI19/00666). Instituto de Salud Carlos III. 2020-2023.

Management centre: FUAM

García Rodríguez J. Evaluación infectious diseases panel en cobas e801 Roche diagnostics S.L. 2017-Ongoing.

Management centre: FIBHULP

García Rodríguez J. Validación de un nuevo kit para detección de virus respiratorios por pcr a tiempo real. Genómica S.A.U. 2018-Ongoing.

Management centre: FIBHULP

Mingorance Cruz J. Aplicación de los métodos de tipado genómico y molecular a la elaboración del mapa microbiológico del Hospital Universitario La Paz. Genómica S.A.U. 2012-Ongoing.

Management centre: FIBHULP

Mingorance Cruz J. Aplicaciones de la PCR digital (Quantstudio) en microbiología clínica. Proquinorte S.A. 2022-Ongoing.

Management centre: FIBHULP

Mingorance Cruz J. Contrato I3 Estabilizado (CESI311). CM. 2011-2025.

Management centre: FIBHULP

Mingorance Cruz J. Mecanismos moleculares de la heteroresistencia y la heterogénea susceptibilidad a carbapenémicos en Enterobacterias productoras de carbapenemasas (PI19/01356). ISCIII. 2020-2022.

Management centre: FIBHULP

Prados-Rosales R. Mecanismos de vesiculación en micobacterias y su conexión con la tolerancia a antibióticos (PID2019-110240RB-I00). Agencia Estatal de Investigación. 2020-2023.

Management centre: FUAM

Prados-Rosales R. Role of mycobacterial dynamin-like proteins in the biogenesis of membrane vesicles, and host-pathogen interactions (1R01AI161821-01). National Institutes of Health. 2021-2024.

Management centre: FUAM

● Clinical trials

Loeches Yagüe MB. Eficacia y seguridad de 7 versus 14 días de tratamiento antibiótico para la bacteriemia producida por pseudomonas aeruginosa: un ensayo clínico multicéntrico, aleatorizado (shorten-2) con un análisis door/radar.

Type: Clinical Trials, phase. 6023 SHORTEN II.

Sponsored by: Fundacion Publica Andaluza Para La Gestion de La Investigacion en Salud de Sevilla.

Signed date: 31/01/2022

Falces Romero I. Estudio de la variabilidad genética del virus respiratorio sincitial para el desarrollo de una vacuna.

Type: No EPA. 2022.009.

Sponsored by: Hipra Scientific, S.L.U.

Signed date: 28/03/2022

Loeches Yagüe MB. Terapia antibiótica cor-

ta comparada con el tratamiento antibiótico convencional en pacientes con endocarditis infecciosa por cocos gram positivos: ensayo clínico aleatorizado.

Type: Clinical Trials, phase IV. 6115.

Sponsored by: Olmos Blanco, Carmen.

Signed date: 06/05/2022

Loeches Yagüe MB. Análisis retrospectivo del uso en la práctica real de cefiderocol para el tratamiento de infecciones por gramnegativos como parte del programa de acceso precoz (estudio perseus).

Type: EOm no prospectivo. 2022.358.

Sponsored by: Shionogi B.V.

Signed date: 07/09/2022

● Patents and trademarks

Mingorance Cruz J, Castán García P, Franco de Sarabia Rosado PM, inventors; 2B BLAC-KBIO S.L., assignee. Composition, method and kit for detecting fungi and yeasts by means of sequencing. PCT/ES2010/000248; 2010 June 02.

Mingorance Cruz J, Castán García P, Franco de Sarabia Rosado PM, inventors; BIOTOOLS BIOTECHNOLOGICAL & MEDICAL LABORATORIES S.A., assignee. Composition, method and kit for detecting bacteria by means of sequencing. PCT/ES2009/000507, EP2492352, US2013157265, CA2775273, MX2012004627; 2009 October 22.

Vicente Muñoz M, Mingorance Cruz J, Rueda González MS, inventors; CSIC, assignee. Method for determining state of growth and viability of bacterial FTsZ population, whether natural or cultivated, is based on determining existence of FTsZ rings in actively growing individual cells. P200200370; 2002 February 15.