

## TOTAL PRODUCTION

Nom de l'équipe : Bacterial Structures Involved in the Modulation of Bacterial Resistance to Antibiotics

Nom du directeur pour le contrat en cours : Michel ARTHUR

Nom du directeur pour le contrat à venir : Michel ARTHUR

### I. PRODUITS DE LA RECHERCHE

*Publications of staff recruited during the last five years and done in their previous team are flagged with ☞*

*Publications done in collaboration with another team of the CRC are flagged with ■*

#### 1. Journaux / revues


##### Articles scientifiques

**2017**

- ☞ Beloin C, Fernandez-Hidalgo N, Lebeaux D. Understanding biofilm formation in intravascular device-related infections. *Intensive Care Med*. 2017 Mar;43(3):443-6.
- Compain F, Arthur M. Impaired inhibition by avibactam and resistance to the ceftazidime-avibactam combination due to the D179Y substitution in the beta-lactamase KPC-2. *Antimicrob Agents Chemother*. 2017 May; doi:10.1128/aac.00451-17.
- Grohs P, Taieb G, Morand P, Kaibi I, Podglajen I, Lavollay M, Mainardi JL, Compain F. *In vitro* activity of ceftolozane-tazobactam against multidrug-resistant nonfermenting gram-negative bacilli isolated from patients with cystic fibrosis. *Antimicrob Agents Chemother*. 2017 Apr; 61(4) pii: e02688-16.
- Lebeaux D, Freund R, van Delden C, Guillot H, Marbus SD, Matignon M, Van Wijngaerden E, Douvry B, De Greef J, Vuotto F, Tricot L, Fernandez-Ruiz M, Dantal J, Hirzel C, Jais JP, *et al*. Outcome and treatment of nocardiosis after solid organ transplantation: New insights from a european study. *Clin Infect Dis*. 2017 May; 64(10):1396-405.
- Lefebvre AL, Le Moigne V, Bernut A, Veckerle C, Compain F, Herrmann JL, Kremer L, Arthur M, Mainardi JL. Inhibition of the beta-lactamase Bla<sub>Mab</sub> by avibactam improves the *in vitro* and *in vivo* efficacy of imipenem against *Mycobacterium abscessus*. *Antimicrob Agents Chemother*. 2017 Apr; 61(4)pii: e02440-16.
- Ourghanlian C, Soroka D, Arthur M. Inhibition by avibactam and clavulanate of the beta-lactamases KPC-2 and CTX-M-15 harboring the substitution N132G in the conserved SDN motif. *Antimicrob Agents Chemother*. 2017 Mar;61(3)pii: e02510-16..
- Parize P, Muth E, Richaud C, Gratigny M, Pilmis B, Lamamy A, Mainardi JL, Cheval J, de Visser L, Jagorel F, Ben Yahia L, Bamba G, Dubois M, Join-Lambert O, Leruez-Ville M, *et al*. Untargeted next-generation sequencing-based first-line diagnosis of

- infection in immunocompromised adults: A multicentre, blinded, prospective study. *Clin Microbiol Infect.* 2017 Feb 10; doi:10.1016/j.cmi.2017.02.006.
8. Soroka D, Ourghanlian C, Compain F, Fichini M, Dubee V, Mainardi JL, Hugonnet JE, Arthur M. Inhibition of beta-lactamases of mycobacteria by avibactam and clavulanate. *J Antimicrob Chemother.* 2017 Apr;72(4):1081-8.
  9. Tissot-Dupont H, Casalta JP, Gouriet F, Hubert S, Salaun E, Habib G, Fernandez-Gerlinger MP, Mainardi JL, Tattevin P, Revest M, Lucht F, Botelho-Nevers E, Gagneux-Brunon A, Snygg-Martin U, Chan KL, *et al.* International experts' practice in the antibiotic therapy of infective endocarditis is not following the guidelines. *Clin Microbiol Infect.* 2017 Mar; 18 doi:10.1016/j.cmi.2017.03.007.

## 2016

10.  Aberkane S, Compain F, Decre D, Dupont C, Laurens C, Vittecoq M, Pantel A, Solassol J, Carriere C, Renaud F, Brieu N, Lavigne JP, Bouzinbi N, Ouedraogo AS, Jean-Pierre H, *et al.* High prevalence of sxt/r391-related integrative and conjugative elements carrying *bla<sub>CMY-2</sub>* in *Proteus mirabilis* isolates from gulls in the south of France. *Antimicrob Agents Chemother.* 2016 Feb; 60(2):1148-52.
11. Arthur M. Regulation of bacterial peptidoglycan polymerization. *Trends Microbiol.* 2016 Jul;24(7):519-21.
12. Bhattacharjee N, Field MJ, Simorre JP, Arthur M, Bougault CM. Hybrid potential simulation of the acylation of *Enterococcus faecium* L,D-transpeptidase by carbapenems. *J Phys Chem B.* 2016 Jun;120(21):4767-81.
13. Compain F, Gallah S, Eckert C, Arlet G, Ramahefasolo A, Decre D, Lavollay M, Podglajen I. Assessment of carbapenem resistance in enterobacteriaceae with the rapid and easy-to-use chromogenic beta carba test. *J Clin Microbiol.* 2016 Dec;54(12):3065-8.
14. Coussement J, Lebeaux D, van Delden C, Guillot H, Freund R, Marbus S, Melica G, Van Wijngaerden E, Douvry B, Van Laecke S, Vuotto F, Tricot L, Fernandez-Ruiz M, Dantal J, Hirzel C, *et al.* Nocardia infection in solid organ transplant recipients: A multicenter European case-control study. *Clin Infect Dis.* 2016 Aug;63(3):338-45.
15. Desbonnet C, Tait-Kamradt A, Garcia-Solache M, Dunman P, Coleman J, Arthur M, Rice LB. Involvement of the eukaryote-like kinase-phosphatase system and a protein that interacts with penicillin-binding protein 5 in emergence of cephalosporin resistance in cephalosporin-sensitive class a penicillin-binding protein mutants in *Enterococcus faecium*. *MBio.* 2016 Apr;7(2):e02188-15.
16. Fonvielle M, Sakkas N, Iannazzo L, Le Fournis C, Patin D, Mengin-Lecreulx D, El-Sagheer A, Braud E, Cardon S, Brown T, Arthur M,\* Etheve-Quellejeu M.\* Electrophilic RNA for peptidyl-RNA synthesis and site-specific cross-linking with tRNA-binding enzymes. *Angew Chem Int Ed Engl.* 2016 Oct;55(43):13553-7. \*co-corresponding author
17. Hugonnet JE, Mengin-Lecreulx D, Monton A, den Blaauwen T, Carbonnelle E, Veckerle C, Brun YV, van Nieuwenhze M, Bouchier C, Tu K, Rice LB, Arthur M. Factors essential for L,D-transpeptidase-mediated peptidoglycan cross-linking and beta-lactam resistance in *Escherichia coli*. *Elife.* 2016 Oct;5pii: e19469
18. Iannazzo L, Soroka D, Triboulet S, Fonvielle M, Compain F, Dubee V, Mainardi JL, Hugonnet JE, Braud E, Arthur M,\* Etheve-Quellejeu M.\* Routes of synthesis of carbapenems for optimizing both the inactivation of L,D-transpeptidase Ldt<sub>Mt1</sub> of *Mycobacterium tuberculosis* and the stability toward hydrolysis by beta-lactamase BlaC. *J Med Chem.* 2016 Apr;59(7):3427-38. \*co-corresponding author
19. Lefebvre AL, Dubee V, Cortes M, Dorchene D, Arthur M, Mainardi JL. Bactericidal and intracellular activity of beta-lactams against *Mycobacterium abscessus*. *J Antimicrob Chemother.* 2016 Jun;71(6):1556-63.
20. Mzabi A, Kerneis S, Richaud C, Podglajen I, Fernandez-Gerlinger MP, Mainardi JL. Switch to oral antibiotics in the treatment of infective endocarditis is not associated

with increased risk of mortality in non-severely ill patients. Clin Microbiol Infect. 2016 Jul;22(7):607-12.

21. Ouedraogo AS, Compain F, Sanou M, Aberkane S, Bouzinbi N, Hide M, Sangare L, Ouedraogo-Traore R, Jean-Pierre H, Vendrell J, Solassol J, Decre D, Godreuil S. First description of IncX3 plasmids carrying *bla*<sub>oxa-181</sub> in *Escherichia coli* clinical isolates in Burkina Faso. Antimicrob Agents Chemother. 2016 May;60(5):3240-2.
22. Patin D, Turk S, Barreteau H, Mainardi JL, Arthur M, Gobec S, Mengin-Lecreulx D, Blanot D. Unusual substrate specificity of the peptidoglycan MurE ligase from *Erysipelothrix rhusiopathiae*. Biochimie. 2016 Feb;121:209-18.

## 2015

23. Aberkane S, Compain F, Barraud O, Ouedraogo AS, Bouzinbi N, Vittecoq M, Jean-Pierre H, Decre D, Godreuil S. Non-O1/non-O139 *Vibrio cholerae* avian isolate from France cocarrying the *bla*<sub>VIM-1</sub> and *bla*<sub>VIM-4</sub> genes. Antimicrob Agents Chemother. 2015 Oct;59(10):6594-6.
24. Dhar N, Dubee V, Ballell L, Cuinet G, Hugonnet JE, Signorino-Gelo F, Barros D, Arthur M\*, McKinney JD\*. Rapid cytolysis of *Mycobacterium tuberculosis* by faropenem, an orally bioavailable beta-lactam antibiotic. Antimicrob Agents Chemother. 2015 Feb;59(2):1308-19. \*co-corresponding author.
25. Dubee V, Bernut A, Cortes M, Lesne T, Dorchene D, Lefebvre AL, Hugonnet JE, Gutmann L, Mainardi JL, Herrmann JL, Gaillard JL, Kremer L, Arthur M. Beta-lactamase inhibition by avibactam in *Mycobacterium abscessus*. J Antimicrob Chemother. 2015 Apr;70(4):1051-8.
26. Dubee V, Soroka D, Cortes M, Lefebvre AL, Gutmann L, Hugonnet JE, Arthur M, Mainardi JL. Impact of beta-lactamase inhibition on the activity of ceftaroline against *Mycobacterium tuberculosis* and *Mycobacterium abscessus*. Antimicrob Agents Chemother. 2015 May;59(5):2938-41.
27. Iannazzo L, Laisne G, Fonvielle M, Braud E, Herbeuval JP, Arthur M, Etheve-Quelquejeu M. Synthesis of 3'-fluoro-trna analogues for exploring non-ribosomal peptide synthesis in bacteria. ChemBiochem. 2015 Feb 9;16(3):477-86.
28. Kerneis S, Valade S, Geri G, Compain F, Lavollay M, Rostane H, Carbonnelle E, Mainardi JL. Cefoxitin as a carbapenem-sparing antibiotic for infections caused by extended-spectrum beta-lactamase-producing *Escherichia coli* and *Klebsiella pneumoniae*. Infect Dis (Lond). 2015 Jul;47(11):789-95.
29. Lebeaux D, Leflon-Guibout V, Ghigo JM, Beloin C. *In vitro* activity of gentamicin, vancomycin or amikacin combined with EDTA or L-arginine as lock therapy against a wide spectrum of biofilm-forming clinical strains isolated from catheter-related infections. J Antimicrob Chemother. 2015 Feb;70(6):1704-12.
30. Levefaudes M, Patin D, de Sousa-d'Auria C, Chami M, Blanot D, Herve M, Arthur M, Houssin C, Mengin-Lecreulx D. Diaminopimelic acid amidation in *Corynebacteriales*: New insights into the role of LtsA in peptidoglycan modification. J Biol Chem. 2015 May;290(21):13079-94.
31. Panesso D, Planet PJ, Diaz L, Hugonnet JE, Tran TT, Narechania A, Munita JM, Rincon S, Carvajal LP, Reyes J, Londono A, Smith H, Sebra R, Deikus G, Weinstock GM, et al. Methicillin-susceptible, vancomycin-resistant *Staphylococcus aureus*, Brazil. Emerg Infect Dis. 2015 Oct;21(10):1844-8.
32. Rullas J, Dhar N, McKinney JD, Garcia-Perez A, Lelievre J, Diacon AH, Hugonnet JE, Arthur M, Angulo-Barturen I, Barros-Aguirre D, Ballell L. Combinations of beta-lactam antibiotics currently in clinical trials are efficacious in a DHP-I-deficient mouse model of tuberculosis infection. Antimicrob Agents Chemother. 2015 Aug;59(8):4997-9.
33. Sacco E, Cortes M, Josseume N, Bouchier C, Dubee V, Hugonnet JE, Mainardi JL, Rice LB, Arthur M. Mutation landscape of acquired cross-resistance to glycopeptide and beta-lactam antibiotics in *Enterococcus faecium*. Antimicrob Agents Chemother. 2015 Sep;59(9):5306-15.

34. Soroka D, Li de la Sierra-Gallay I, Dubee V, Triboulet S, van Tilbeurgh H, Compain F, Ballell L, Barros D, Mainardi JL, Hugonnet JE, Arthur M. Hydrolysis of clavulanate by *Mycobacterium tuberculosis* beta-lactamase BlaC harboring a canonical SDN motif. *Antimicrob Agents Chemother*. 2015 Sep;59(9):5714-20.
35. Triboulet S, Bougault CM, Laguri C, Hugonnet JE, Arthur M\*, Simorre JP\*. Acyl acceptor recognition by *Enterococcus faecium* L,D-transpeptidase Ldt<sub>fm</sub>. *Mol Microbiol*. 2015 Oct;98(1):90-100. \*co-corresponding author.

## 2014

36. Beloin C, Renard S, Ghigo JM, Lebeaux D. Novel approaches to combat bacterial biofilms. *Curr Opin Pharmacol*. 2014 Oct;18:61-8.
37. Compain F, Babosan A, Brisse S, Genel N, Audo J, Ailloud F, Kassis-Chikhani N, Arlet G, Decre D. Multiplex PCR for detection of seven virulence factors and K1/K2 capsular serotypes of *Klebsiella pneumoniae*. *J Clin Microbiol*. 2014 Dec;52(12):4377-80.
38. Compain F, Decre D, Frazier I, Ramahefasolo A, Lavollay M, Carbonnelle E, Rostane H, Tackin A, Berger-Carbonne A, Podglajen I. Carbapenemase-producing bacteria in patients hospitalized abroad, france. *Emerg Infect Dis*. 2014 Jul;20(7):1246-8.
39. Compain F, Frangeul L, Drieux L, Verdet C, Brisse S, Arlet G, Decre D. Complete nucleotide sequence of two multidrug-resistant IncR plasmids from *Klebsiella pneumoniae*. *Antimicrob Agents Chemother*. 2014 Jul;58(7):4207-10.
40. Compain F, Hays C, Touak G, Dmytruk N, Trieu-Cuot P, Joubrel C, Poyart C. Molecular characterization of *Streptococcus agalactiae* isolates harboring small *erm(T)*-carrying plasmids. *Antimicrob Agents Chemother*. 2014 Nov;58(11):6928-30.
41. Ekpe K, Novara A, Mainardi JL, Fagon JY, Faisy C. Methicillin-resistant *Staphylococcus aureus* bloodstream infections are associated with a higher energy deficit than other ICU-acquired bacteremia. *Intensive Care Med*. 2014 Dec;40(12):1878-87.
42. Grohs P, Kerneis S, Sabatier B, Lavollay M, Carbonnelle E, Rostane H, Souty C, Meyer G, Gutmann L, Mainardi JL. Fighting the spread of AmpC-hyperproducing Enterobacteriaceae: Beneficial effect of replacing ceftriaxone with cefotaxime. *J Antimicrob Chemother*. 2014 Mar;69(3):786-9.
43. Hugonnet JE, Haddache N, Veckerle C, Dubost L, Marie A, Shikura N, Mainardi JL, Rice LB, Arthur M. Peptidoglycan cross-linking in glycopeptide-resistant *Actinomycetales*. *Antimicrob Agents Chemother*. 2014 Jan;58(3):1749-56.
44. Lavollay M, Dubee V, Heym B, Herrmann JL, Gaillard JL, Gutmann L, Arthur M, Mainardi JL. *In vitro* activity of cefoxitin and imipenem against *Mycobacterium abscessus* complex. *Clin Microbiol Infect*. 2014 May;20(5):O297-300.
45. Lebeaux D, Chauhan A, Letoffe S, Fischer F, de Reuse H, Beloin C, Ghigo JM. pH-mediated potentiation of aminoglycosides kills bacterial persisters and eradicates *in vivo* biofilms. *J Infect Dis*. 2014 Nov;210(9):1357-66.
46. Lebeaux D, Fernandez-Hidalgo N, Chauhan A, Lee S, Ghigo JM, Almirante B, Beloin C. Management of infections related to totally implantable venous-access ports: Challenges and perspectives. *Lancet Infect Dis*. 2014 Feb;14(2):146-59.
47. Lebeaux D, Ghigo JM, Beloin C. Biofilm-related infections: Bridging the gap between clinical management and fundamental aspects of recalcitrance toward antibiotics. *Microbiol Mol Biol Rev*. 2014 Sep;78(3):510-43.
48. Lebeaux D, Morelon E, Suarez F, Lanternier F, Scemla A, Frange P, Mainardi JL, Lecuit M, Lortholary O. Nocardiosis in transplant recipients. *Eur J Clin Microbiol Infect Dis*. 2014 May;33(5):689-702.
49. Lecoq L, Bougault C, Triboulet S, Dubee V, Hugonnet JE, Arthur M, Simorre JP. Chemical shift perturbations induced by the acylation of *Enterococcus faecium* L,D-transpeptidase catalytic cysteine with ertapenem. *Biomol NMR Assign*. 2014 Oct;8(2):339-43.

50. Moutiez M, Seguin J, Fonvielle M, Belin P, Jacques IB, Favry E, Arthur M, Gondry M. Specificity determinants for the two tRNA substrates of the cyclodipeptide synthase AlbC from *Streptomyces noursei*. *Nucleic Acids Res.* 2014 Jun;42(11):7247-58.
51. Sacco E, Cortes M, Josseume N, Rice LB, Mainardi JL, Arthur M. Serine/threonine protein phosphatase-mediated control of the peptidoglycan cross-linking L,D-transpeptidase pathway in *Enterococcus faecium*. *MBio.* 2014 Jul;5(4):e01446-14.
52. Santarem M, Fonvielle M, Sakkas N, Laisne G, Chemama M, Herbeuval JP, Braud E, Arthur M, Etheve-Quellejeu M. Synthesis of 3'-triazoyl-dinucleotides as precursors of stable Phe-tRNA(Phe) and Leu-tRNA(Leu) analogues. *Bioorg Med Chem Lett.* 2014 Aug;24(15):3231-3.
53. Schanda P, Triboulet S, Laguri C, Bougault CM, Ayala I, Callon M, Arthur M, Simorre JP. Atomic model of a cell-wall cross-linking enzyme in complex with an intact bacterial peptidoglycan. *J Am Chem Soc.* 2014 Dec;136(51):17852-60.
54. Soroka D, Dubee V, Soulier-Escrihuella O, Cuinet G, Hugonnet JE, Gutmann L, Mainardi JL, Arthur M. Characterization of broad-spectrum *Mycobacterium abscessus* class a beta-lactamase. *J Antimicrob Chemother.* 2014 Mar;69(3):691-6.

### 2013

55. Ben Nasr A, Decre D, Compain F, Genel N, Barguelli F, Arlet G. Emergence of NDM-1 in association with OXA-48 in *Klebsiella pneumoniae* from Tunisia. *Antimicrob Agents Chemother.* 2013 Aug;57(8):4089-90.
56. Bernier SP, Lebeaux D, DeFrancesco AS, Valomon A, Soubigou G, Coppee JY, Ghigo JM, Beloin C. Starvation, together with the SOS response, mediates high biofilm-specific tolerance to the fluoroquinolone ofloxacin. *PLoS Genet.* 2013 Jan;9(1):e1003144.
57. Cordillot M, Dubee V, Triboulet S, Dubost L, Marie A, Hugonnet JE, Arthur M, Mainardi JL. *In vitro* cross-linking of *Mycobacterium tuberculosis* peptidoglycan by L,D-transpeptidases and inactivation of these enzymes by carbapenems. *Antimicrob Agents Chemother.* 2013 Dec;57(12):5940-5.
58. Fonvielle M, Le Du MH, Lequin O, Lecoq A, Jacquet M, Thai R, Dubois S, Grach G, Gondry M, Belin P. Substrate and reaction specificity of *Mycobacterium tuberculosis* cytochrome P450 CYP121: Insights from biochemical studies and crystal structures. *J Biol Chem.* 2013 Jun 14; 288(24):17347-59.
59. Fonvielle M, Li de La Sierra-Gallay I, El-Sagheer AH, Lecerf M, Patin D, Mellal D, Mayer C, Blanot D, Gale N, Brown T, van Tilbeurgh H, Etheve-Quellejeu M\*, Arthur M\*. The structure of FemX<sub>Wv</sub> in complex with a peptidyl-RNA conjugate: Mechanism of aminoacyl transfer from Ala-tRNA<sup>Ala</sup> to peptidoglycan precursors. *Angew Chem Int Ed Engl.* 2013 Jul;52(28):7278-81. \*co-corresponding author
60. Fonvielle M, Mellal D, Patin D, Lecerf M, Blanot D, Bouhss A, Santarem M, Mengin-Lecreux D, Sollogoub M, Arthur M\*, Etheve-Quellejeu M\*. Efficient access to peptidyl-RNA conjugates for picomolar inhibition of non-ribosomal FemX<sub>Wv</sub> aminoacyl transferase. *Chemistry.* 2013 Jan;19(4):1357-63. \*co-corresponding author.
61. Lecoq L, Dubee V, Triboulet S, Bougault C, Hugonnet JE, Arthur M\*, Simorre JP\*. Structure of *Enterococcus faecium* L,D-transpeptidase acylated by ertapenem provides insight into the inactivation mechanism. *ACS Chem Biol.* 2013 Apr;8(6):1140-6. \*co-corresponding author.
62. Legrand M, Pirracchio R, Rosa A, Petersen ML, Van der Laan M, Fabiani JN, Fernandez-gerlinger MP, Podglajen I, Safran D, Cholley B, Mainardi JL. Incidence, risk factors and prediction of post-operative acute kidney injury following cardiac surgery for active infective endocarditis: An observational study. *Crit Care.* 2013 Oct;17(5):R220.
63. Mellal D, Fonvielle M, Santarem M, Chemama M, Schneider Y, Iannazzo L, Braud E, Arthur M\*, Etheve-Quellejeu M\*. Synthesis and biological evaluation of non-

isomerizable analogues of Ala-tRNA<sup>Ala</sup>. *Org Biomol Chem*. 2013 Sep;11(36):6161-9.  
\*co-corresponding author

64. Skedelj V, Perdih A, Brvar M, Kroflic A, Dubbee V, Savage V, O'Neill AJ, Solmajer T, Bester-Rogac M, Blanot D, Hugonnet JE, Magnet S, Arthur M, Mainardi JL, Stojan J, *et al*. Discovery of the first inhibitors of bacterial enzyme D-aspartate ligase from *Enterococcus faecium* (Asl<sub>fm</sub>). *Eur J Med Chem*. 2013 Sep;67:208-20.
65. Triboulet S, Dubee V, Lecoq L, Bougault C, Mainardi JL, Rice LB, Etheve-Quellejeu M, Gutmann L, Marie A, Dubost L, Hugonnet JE, Simorre JP, Arthur M. Kinetic features of L,D-transpeptidase inactivation critical for beta-lactam antibacterial activity. *PLoS One*. 2013;8(7):e67831.

## 2012

66. Barreteau H, El Ghachi M, Barneoud-Arnoulet A, Sacco E, Touze T, Duche D, Gerard F, Brooks M, Patin D, Bouhss A, Blanot D, van Tilbeurgh H, Arthur M, Lloubes R, Mengin-Lecreux D. Characterization of colicin M and its orthologs targeting bacterial cell wall peptidoglycan biosynthesis. *Microb Drug Resist*. 2012 Jun;18(3):222-9.
67. Barreteau H, Tiouajni M, Graille M, Josseaume N, Bouhss A, Patin D, Blanot D, Fourgeaud M, Mainardi JL, Arthur M, van Tilbeurgh H, Mengin-Lecreux D, Touze T. Functional and structural characterization of PaeM, a colicin M-like bacteriocin produced by *Pseudomonas aeruginosa*. *J Biol Chem*. 2012 Oct;287(44):37395-405.
68. ☞ Chauhan A, Lebeaux D, Decante B, Kriegel I, Escande MC, Ghigo JM, Beloin C. A rat model of central venous catheter to study establishment of long-term bacterial biofilm and related acute and chronic infections. *PLoS One*. 2012 May;7(5):e37281.
69. ☞ Chauhan A, Lebeaux D, Ghigo JM, Beloin C. Full and broad-spectrum *in vivo* eradication of catheter-associated biofilms using gentamicin-EDTA antibiotic lock therapy. *Antimicrob Agents Chemother*. 2012 Dec;56(12):6310-8.
70. Dubee V, Arthur M, Fief H, Triboulet S, Mainardi JL, Gutmann L, Sollogoub M, Rice LB, Etheve-Quellejeu M, Hugonnet JE. Kinetic analysis of *Enterococcus faecium* L,D-transpeptidase inactivation by carbapenems. *Antimicrob Agents Chemother*. 2012 Jun;56(6):3409-12.
71. Dubee V, Triboulet S, Mainardi JL, Etheve-Quellejeu M, Gutmann L, Marie A, Dubost L, Hugonnet JE, Arthur M. Inactivation of *Mycobacterium tuberculosis* L,D-transpeptidase Ldt<sub>Mt1</sub> by carbapenems and cephalosporins. *Antimicrob Agents Chemother*. 2012 Aug;56(8):4189-95.
72. ☞ Lebeaux D, Barbier F, Angebault C, Benmahdi L, Ruppe E, Felix B, Gaillard K, Djossou F, Epelboin L, Dupont C, Renard M, Peroz G, Vandenesch F, Wolff M, Andreumont A, *et al*. Evolution of nasal carriage of methicillin-resistant coagulase-negative staphylococci in a remote population. *Antimicrob Agents Chemother*. 2012 Jan;56(1):315-23.
73. Lecoq L, Bougault C, Hugonnet JE, Veckerle C, Pessey O, Arthur M\*, Simorre JP\*. Dynamics induced by beta-lactam antibiotics in the active site of *Bacillus subtilis* L,D-transpeptidase. *Structure*. 2012 May;20(5):850-61. \*co-corresponding author.
74. Patin D, Barreteau H, Auger G, Magnet S, Crouvoisier M, Bouhss A, Touze T, Arthur M, Mengin-Lecreux D, Blanot D. Colicin m hydrolyses branched lipids II from Gram-positive bacteria. *Biochimie*. 2012 Apr;94(4):985-90.
75. Touze T, Barreteau H, El Ghachi M, Bouhss A, Barneoud-Arnoulet A, Patin D, Sacco E, Blanot D, Arthur M, Duche D, Lloubes R, Mengin-Lecreux D. Colicin M, a peptidoglycan lipid-II-degrading enzyme: Potential use for antibacterial means? *Biochem Soc Trans*. 2012 Dec;40(6):1522-7.

## 2. Ouvrages

### Monographies

1. Fernandez-Gerlinger MP, Mainardi JL. Endocardite infectieuse: du diagnostic au traitement. Encyclopédie-médico-chirurgicale. 2016
2. ☞ Lebeaux D, Ghigo J-M, Lucet JC. Physiopathologie et prévention des infections liées aux dispositifs médicaux implantés. Rev Prat. 2014;64:620-5
3. ☞ Lebeaux D, Joly D, Zahar JR. Infections liées aux cathéters veineux centraux de longue durée. Rev Prat. 2014;64:626-33

#### Chapitres d'ouvrage

1. Lebeaux D, Coussement J, Poirée S, Lortholary O. Chapter 20 – Infections. Pathology of Cardiac Transplantation – A clinical-pathological perspective. Springer Science+Business Media. Sous presse.
2. Mainardi JL. Endocardite. Référentiel en Microbiologie (REMIC). 2015. Editeurs : Société Française de Microbiologie.
3. Lebeaux D, Rodriguez-Nava V, Boiron P, Lortholary O. Actinomycoses et nocardioses. Traité de médecine, 5e édition. Médecine Sciences-Publications/Lavoisier. Sous presse
4. Etheve-Quellejeu, Arthur M. 2014. Covalent functionalization of nucleic acids. In Chemistry of Organo-Hybrids: Synthesis and Characterization of Functional Nano-Objects. Lacôte, E. Charleux, B. Copéret, C. Eds. Wiley-VCH, Pages 272-298.
5. Hugonnet JE, Mainardi JL, Arthur M. L,D-transpeptidase (*Enterococcus*). Handbook of Proteolytic Enzymes, 3rd Edition. 2013. Chapter 552. Pages 2465-2472.
6. Rodriguez-Nava V, Lebeaux D, Lortholary O, Boiron P. *Nocardia*. Précis de Bactériologie Clinique, 3è édition, Editions ESKA. 2013
7. Mainardi JL, Utili R. Endocarditis. European Manual of Clinical Microbiology. 1st edition. 2012. Editors G. Cornaglia, R. Courcol, JL Herrmann, G Kahlmeter, H Peigue-Lafeuille, J Vila.

### 3. Colloques / congrès, séminaires de recherche

#### Congrès

Non relevant

### 4. Développements instrumentaux et méthodologiques

Non relevant

### 5. Produits et outils informatiques

Non relevant

### 6. Brevets, licences et déclarations d'invention

C10895 Molecular target of *Mycobacterium tuberculosis* for development of drug and vaccine  
J Hopkins University.

### 7. Rapports d'expertises techniques, produits des instances de normalisation

Non relevant

## 8. Produits des activités didactiques

### Ouvrages

1. Fernandez-Gerlinger MP, Mainardi JL. Endocardite Infectieuse: du diagnostic au traitement. Encyclopédie Médico-chirurgicale. 2016;11(3):1-7.
2. Lebeaux D, Ghigo J-M. Les biofilms : d'intraitables adversaires ? Biofutur 2013.
3. Lebeaux D, Ghigo J-M. Infections associées aux biofilms : quelles perspectives thérapeutiques issues de la recherche fondamentale ? Med Sci (Paris). 2012;28:727-39.
4. Arthur M. Teixobactine, Encyclopaedia Universalis

## 9. Produits destinés au grand public

### Produits de vulgarisation : interviews

1. Hugonnet JE. TV interview. BFM TV - PREMIERE EDITION - 16/06/2015. "Importance pour la santé de se laver les mains" (Antoine Pollez).
2. Hugonnet JE. TV interview. E=M6 Emission du dimanche 05 juin 2016. "Hygiène : que se passerait-il si nous arrêtons de nous laver ?"
3. Hugonnet JE. WEB Interview. Nature Medicine, News. Oldie but goodie: Repurposing penicillin for tuberculosis. 2014. Amanda B. Keener. Nature Medicine. 20, 976–978.

## 10. Autres produits propres à une discipline

Non relevant

## II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

### 1. Activités éditoriales

#### Participation à des comités éditoriaux (revues, collections)

Mainardi JL. Associated editor of Clinical Microbiology and infection (2007-2016)  
Arthur M. Member of the editorial board of Antimicrob Agents Chemother (Since 1996)

### 2. Activités d'évaluation

#### Responsabilités au sein d'instances d'évaluation

Mainardi JL. Expert for grants from AHPH (FERCM) (since 2015).  
Mainardi JL. Member of the scientific committee of ARS Ile de France on antibiotics and resistance (since 2015).  
Arthur M. Science Funding Interview Panel, Wellcome Trust (UK) (2013).  
Arthur M. Member of the ANR evaluation committee "Innovation Biomédicale" (2014-2016).  
Arthur M. Member of the selection committee for PhD fellowships; Ecole Doctorale 515 UP6 (since 2014).



Arthur M. Member of the evaluation committee Panel 4 (Health0417) Pharmaceutical research, Academy of Finland, Research Council for Health (2016).

### Évaluation d'articles et d'ouvrages scientifiques

Arthur M. Reviewer for Nat Chem Biol, Angew Chem Int Ed Engl, JACS, Nat Com, J Antimicrob Chemother.  
Mainardi JL. Reviewer for Clin Infect Dis, Antimicrob Agents Chemother, J Antimicrob Chemother.  
Hugonnet. Reviewer for Nat Chem Biol, PlosOne, ACS Infect Dis.

### Évaluation de laboratoires (type Hceres)

Arthur M. Evaluation d'une EA pour l'AERES en 2014 EA7359 UP11.

### Évaluation de projets de recherche

Arthur M. Evaluation for Netherlands Organisation for Scientific Research (NWO), Earth and Life sciences division; ANR, Wellcome Trust UK, fond National de la Recherche Scientifique (Belgium).  
Mainardi JL. Vaincre la Mucoviscidose; PHRC.

## 3. Activités d'expertise scientifique

Non relevant

## 4. Organisation de colloques / congrès

Mainardi JL. Member of the scientific committee of the "Réunion Interdisciplinaire de Chimiothérapie Anti-Infectieuse" (since 2013).

## 5. Post-doctorants et chercheurs accueillis

### Post-Doctorants :

Triboulet S. ANR Carbatub (2014-2015) Publications 18,34,35

Sayed N. ANR Carbatub (2013-2014)

Rachid A. NIH RO1 AI046626 (2015-2016)

Cortes M. NIH RO1 AI046626 (2013-2015) Publications 19,25,26,33,51

Sacco E. NIH RO1 AI046626 (2010-2014) Publications 33,51,66,75

Ngadjeua F. JPI AMR NACPLI (2016-2018)

Saccas N. Ecole de l'INSERM-Fondation Bettencourt (2016-2019) Publication 19

Iannazzo L. ANR Carbatub (2014-2015) Publication 18

## 6. Interactions avec les acteurs socio-économiques

Non relevant

## 7. Contrats de recherche financés par des institutions publiques ou caritatives

#### Contrats européens et internationaux

2011-2015 National Institute of Allergy and Infectious Diseases (RO1 AI046626) 533780 \$  
2011-2015 ORCHID. FP7-261378, 530 318 €  
2015-2018 JPI AMR NACPLI (coordinator) 273 567 € (1.4 M€ for six European and Canadian partners).

#### Contrats nationaux

2010-2013 ANR CyDiPepS, 99 183 €  
2012-2013 Laboratoire Pierre Fabre. Program ANTIBIOMARE, 117 705 €  
2012-2015 ANR CARBATUB (Coordinateur), 207 362 €.  
2014-2017 ANR MimictRNA. 172 384 €.  
2016-2020 ANR TransPepNMR 160 000 €

#### Contrats financés par des associations caritatives et des fondations

2013-2016 French Cystic Fibrosis Foundation 110 k€.  
2016-2019 French Cystic Fibrosis Foundation 116 k€.  
2016-2019 Fondation pour la Recherche Médicale 98 k€.

### 8. Indices de reconnaissance

#### Prix

Fonvielle M. Prix 2014 d'encouragement à la recherche en chimie thérapeutique des laboratoires Servier.

#### Invitations à des colloques / congrès à l'étranger

1. Hugonnet JE. "Bêta-lactam targets in *Mycobacterium tuberculosis*" Gordon Research Conference: Tuberculosis Drug Discovery and Development, Girona, Spain. July 2015.
2. Lebeaux D. "Nocardia and solid organ transplantation: epidemiology, diagnosis, treatment", 7<sup>th</sup> International Transplant Infectious Disease Conference, Vienna, Austria, September 7, 2013.
3. Lebeaux D. "Eradication of catheter-associated biofilms by antibiotic locks", 53<sup>rd</sup> ICAAC 2013, Denver, Colorado, September 10-13.
4. Mainardi JL. European Congress of Clinical Microbiology and Infection 2013, 2014
5. Arthur M. 53<sup>th</sup> ICAAC Annual Meeting, Denver CO. 2013
6. Arthur M. 4<sup>th</sup> ASM Conference on Enterococci, Cartagena, Colombia. 2014
7. Arthur M. 4<sup>ème</sup> Conférence du Mycoclub, Marseille, France. 2015
8. Arthur M. European Symposium on Non-tuberculous Mycobacteria, Borstel, Germany 2015
9. Arthur M. 5<sup>th</sup> International Symposium of the SFB 766, Tübingen, Germany. 2017
10. Arthur M. The Great Wall Symposium, Algarve, Portugal 2017