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DEGLI STUDI
DELL'AQUILA



DISCAB
Dipartimento di Scienze
Cliniche Applicate
e Biotecnologiche

CURRICULUM VITAE OF ALESSANDRA PICCIRILLI



<p>PERSONAL INFORMATION</p>	<p>Alessandra Piccirilli Department of Biotechnological and Applied Clinical Sciences Via Vetoio, Località Coppito L'Aquila, I-67100 Italy alessandra.piccirilli@univaq.it</p>
<p>CURRENT POSITION</p>	<p>Research associate in Clinical Biochemistry and Clinical Molecular Biology (SSD: BIO/12), Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy.</p>
<p>EDUCATION OTHER QUALIFICATIONS</p>	<p>2019, November - present: Postgraduate School in Clinical Pathology and Clinical Biochemistry, University of L'Aquila, Italy</p> <p>2019, December: PhD in Experimental Medicine, Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy.</p> <p>2021, January: Practical Training for MiSeq RUO, Illumina Inc., University of L'Aquila, Italy</p> <p>2019, December: Training Course “Ion One Touch 2/ Ion Gene Studio Operational Training”, Thermo Fisher Scientific, Monza, Italy.</p> <p>2017, April: Antibiotic Resistance: Significance of the Problem, Current Knowledge and Future Perspectives Practical Course, Centre for Protein Engineering, University of Liège, Belgium.</p> <p>2017, May: “Protein Purification: practical course”, Centre for Protein Engineering, University of Liège, Belgium.</p> <p>2016, June: Admitted to the profession of Biologist, University of L'Aquila, Italy</p> <p>2015, October: Master’s Degree in Medical Biotechnologies, University of L'Aquila, Italy</p> <p>2013, October: Bachelor's Degree in Biotechnologies, University of L'Aquila, Italy</p>



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<p>ACADEMIC APPOINTMENTS</p>	<p>2022, February- present: Research associate in Clinical Biochemistry and Clinical Molecular Biology (SSD: BIO/12), Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy.</p> <p>2020, March- 2022, February: Post-Doc Research Fellowship in “Molecular diagnostics approaches of multi drug resistant bacteria: characterization of resistant determinants by next-generation technologies” (SSD: BIO/12), Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.</p> <p>2019, November-2020, February: Post-Doc Research Fellowship in “Molecular diagnostic of β-lactam resistance genes in Gram-negative bacteria: molecular biology and biochemistry approaches”, Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.</p> <p>2017, March- 2017, May: Research project on “Biochemical and structural studies of catalytic residues in class A β-lactamases”, Laboratoire de Macromolécules Biologiques, Centre d'Ingénierie des Protéines, University of Liège, Belgium.</p> <p>2016, November- 2019, December: PhD Student in Experimental Medicine, project “Biochemical and molecular characterization of GES and NDM engineered variants: interactions with β-lactams and inhibitors”, Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.</p> <p>2015, October- 2016, September: Post-graduated training, Clinical Biochemistry and Clinical Molecular Biology, Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.</p> <p>2104, September- 2015, September: Laboratory training for the graduation experimental thesis, Clinical Biochemistry and Clinical Molecular Biology, Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy.</p>
<p>CLINIC APPOINTMENTS</p>	<p>2021, March- 2021, June: Laboratory training, Laboratorio Analisi, Ospedale San Salvatore, L'Aquila as a student of Postgraduate School in Clinical Pathology and Clinical Biochemistry.</p>



TEACHING EXPERIENCE

A.A. 2022/2023: Teacher in Clinical Biochemistry and Clinical Molecular Biology (1 CFU), DIAGNOSTIC AND LABORATORY TECHNIQUES [D0442], course Biomedical Laboratory Techniques, University of L'Aquila.

A.A. 2022/2023: Teacher in Clinical Biochemistry and Clinical Molecular Biology (1 CFU), LABORATORY MEDICINE, SEMEIOTICS AND CLINICAL METHODOLOGY [DM0500], course Medicine and Surgery, University of L'Aquila.

A.A. 2022/2023: Teacher in HIGH THROUGHPUT METHODS FOR ANALYSIS OF HUMAN MICROBIOME - [DT0360] (6 CFU), course Applied Data Science, University of L'Aquila.

2020/2021: Teacher in:

◦ "Next-Generation Sequencing" (1 CFU, SSD: BIO/12)

◦ "Nucleic Acid Sequencing: Ion Torrent system" (1 CFU, SSD: BIO/12)

1st level Master degree "Molecular Diagnostics of Genetic, Tumor and Infectious Diseases", Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.

2019/2020: Teacher in:

◦ "Nucleic Acid Sequencing: Ion Torrent system" (1 CFU, SSD: BIO/12)

1st level Master degree "Molecular Diagnostics of Genetic, Tumor and Infectious Diseases", Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.

2018-2021: Teacher in:

◦ "Infectious Disease Molecular Diagnostic: New Molecular Technologies for Identification and Characterization of Antibiotic Resistance Mechanisms in Gram-Negative Pathogens" (1 CFU, SSD: BIO/12)

1st level Master degree "Molecular Diagnostics of Genetic, Tumor and Infectious Diseases", Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.

RESEARCH ACTIVITIES

1. Characterization of mobile genetic elements in Gram-negative bacteria resistant to antimicrobial agents.
2. Biochemical and structural characterization of extended spectrum β -lactamases and carbapenemases (class A, D and B).
3. Interaction of β -lactamases with novel inhibitors, inactivators and new antibiotics.



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	<p>4. 16S Metagenomics for bacterial identification and comparison. 5. Microbial whole-genome sequencing by NGS (Illumina)</p>
<p>RESPONSIBILITY IN ACADEMIC ACTIVITIES</p>	<p>2015, November: National workshop in “Diagnostica Molecolare di Patogeni Emergenti”, University of L’Aquila. 2017, June: International meeting: “13th β-lactamase meeting”, Santo Stefano di Sessanio, L’Aquila, Italy.</p>
<p>EDITORIAL BOARD, EDITORIAL ACTIVITIES, SOCIETY MEMBERSHIP</p>	<p>Guest Editor, Special Issue “Antibiotics Resistance and Molecular Epidemiology of Carbapenem-Resistance Bacteria”. Antibiotics, MDPI.</p> <p>Review Editor, Frontiers in Cellular and Infection Microbiology.</p> <p>Review Editor, Frontiers in Antibiotics.</p> <p>Guest Editor, Special Issue "Molecular Diagnostics of Antimicrobial Resistance". Diagnostics, MDPI.</p> <p>Assistant Guest Editor, Special Issue “Structural, Molecular and Kinetic Characterization of Metallo-β-Lactamases”. Molecules, MDPI.</p> <p>2020-present: Member of American Society for Microbiology (ASM).</p> <p>2019-present: Member of Società Italiana di Biochimica Clinica e Biologia Molecolare Clinica - Medicina di Laboratorio (SIBIOC).</p> <p>2018-present: Member of “European Society of Clinical Microbiology and Infectious Diseases” (ESCMID).</p>
<p>SCIENTIFIC ACHIEVEMENTS BIBLIOMETRIC INDICATORS</p>	<p>Scopus Author ID: 57189041486</p> <p>https://orcid.org/0000-0001-7560-5221</p>
<p>SELECTED PUBLICATIONS</p>	<p>1. Piccirilli A, Meroni E, Mauri C, Perilli M, Cherubini S, Pompilio A, Luzzaro F, Principe L. Analysis of Antimicrobial Resistance Genes (ARGs) in Enterobacterales and <i>A. baumannii</i> Clinical Strains Colonizing a Single Italian Patient. Antibiotics. 2023. 12(3):439. https://doi.org/10.3390/antibiotics12030439</p>



2. Bognanni N, Brisdelli F, **Piccirilli A**, Basile L, La Piana L, Di Bella S, Principe L, Vecchio G, Perilli M. New polyimidazole ligands against subclass B1 metallo- β -lactamases: Kinetic, microbiological, docking analysis. *J Inorg Biochem.* 2023. 242:112163. doi: 10.1016/j.jinorgbio.2023.112163.
3. Santinelli L, Rossi G, Gioacchini G, Verin R, Maddaloni L, Cavallari EN, Lombardi F, **Piccirilli A**, Fiorucci S, Carino A, Marchianò S, Lofaro CM, Caiazza S, Ciccozzi M, Scagnolari C, Mastroianni CM, Ceccarelli G, d'Ettore G. The crosstalk between gut barrier impairment, mitochondrial dysfunction, and microbiota alterations in people living with HIV. *J Med Virol.* 2023. 95(1):e28402. doi: 10.1002/jmv.28402.
4. Bellio P, De Angelis S, **Piccirilli A**, Di Michele G, Barnabei R, Amicosante G, Perilli M, Celenza G. Evaluation of the Analytical Performances of the Biolabo SOLEA 100 Optical Coagulometer and Comparison with the Stago STA-R MAX Analyser in the Determination of PT, APTT, and Fibrinogen. *Diagnostics (Basel).* 2022. 13(1):85. doi: 10.3390/diagnostics13010085.
5. Principe L, Di Bella S, Conti J, Perilli M, **Piccirilli A**, Mussini C, Decorti G. *Acinetobacter baumannii* Resistance to Sulbactam/Durlobactam: A Systematic Review. *Antibiotics (Basel).* 2022. 11(12):1793. doi: 10.3390/antibiotics11121793.
6. **Piccirilli A**, Cherubini S, Brisdelli F, Fazii P, Stanziale A, Di Valerio S, Chiavaroli V, Principe L, Perilli M. Molecular Characterization by Whole-Genome Sequencing of Clinical and Environmental *Serratia marcescens* Strains Isolated during an Outbreak in a Neonatal Intensive Care Unit (NICU). *Diagnostics* 2022.12,2180. doi: 10.3390/diagnostics12092180.
7. **Piccirilli A**, Antonelli A, D'Andrea MM, Cherubini S, Perilli M, Rossolini GM. Molecular and Kinetic Characterization of MOX-9, a Plasmid-Mediated Enzyme Representative of a Novel Sublineage of MOX-Type Class C β -Lactamases. *Antimicrob Agents Chemother.* 2022. 30:e0059522. doi: 10.1128/aac.00595-22.
8. Segatore B, **Piccirilli A**, Cherubini S, Principe L, Alloggia G, Mezzatesta ML, Salmeri M, Di Bella S, Migliavacca R, Piazza A, Meroni E, Fazii P, Visaggio D, Visca P, Cortazzo V, De Angelis G,



Pompilio A, Perilli M. In Vitro Activity of Sulbactam-Durlobactam against Carbapenem-Resistant *Acinetobacter baumannii* Clinical Isolates: A Multicentre Report from Italy. *Antibiotics (Basel)*. 2022. 11(8):1136. doi: 10.3390/antibiotics11081136.

9. Trinchieri V, Marazzato M, Ceccarelli G, Lombardi F, **Piccirilli A**, Santinelli L, Maddaloni L, Vassalini P, Mastroianni CM, d'Ettorre G. Exploiting Bacteria for Improving Hypoxemia of COVID-19 Patients. *Biomedicines*. 2022. 10(8):1851. doi: 10.3390/biomedicines10081851.

10. Cherubini S, Perilli M, Segatore B, Fazii P, Parruti G, Frattari A, Amicosante G, **Piccirilli A**. Whole-Genome Sequencing of ST2 *A. baumannii* Causing Bloodstream Infections in COVID-19 Patients. *Antibiotics (Basel)*. 2022. 11(7):955. doi: 10.3390/antibiotics11070955.

11. **Piccirilli A**, Cherubini S, Celenza G, Rossolini GM, Brisdelli F, Segatore B, Principe L, Luzzaro F, Andriani L, Amicosante G, Perilli M. A Two Amino Acid Duplication, L167E168, in the Ω -Loop Drastically Decreases Carbapenemase Activity of KPC-53, a Natural Class A β -Lactamase. *Antimicrob Agents Chemother*. 2022. 66(6):e0240221. doi: 10.1128/aac.02402-21.

12. Di Bonaventura G, Lupetti V, De Fabritiis S, **Piccirilli A**, Porreca A, Di Nicola M, Pompilio A. Giving Drugs a Second Chance: Antibacterial and Antibiofilm Effects of Ciclopirox and Ribavirin against Cystic Fibrosis *Pseudomonas aeruginosa* Strains. *Int J Mol Sci*. 2022. 23(9):5029. doi: 10.3390/ijms23095029.

13. Cherubini S, Perilli M, Azzini AM, Tacconelli E, Maccacaro L, Bazaj A, Naso L, Amicosante G, LTCF-Veneto Working Group, Lo Cascio G, **Piccirilli A**. Resistome and Virulome of Multi-Drug Resistant *E. coli* ST131 Isolated from Residents of Long-Term Care Facilities in the Northern Italian Region. *Diagnostics*. 2022. 12, 213. doi: 10.3390/diagnostics12010213.

14. **Piccirilli A**, Cherubini S, Azzini AM, Tacconelli E, Lo Cascio G, Maccacaro L, Bazaj A, Naso L, Amicosante G, Ltcf-Veneto Working Group, Perilli M. Whole-Genome Sequencing (WGS) of Carbapenem-Resistant *K. pneumoniae* Isolated in Long-Term Care Facilities in the Northern Italian Region. *Microorganisms*. 2021. 9(9):1985. doi: 10.3390/microorganisms9091985.



15. **Piccirilli A**, Criscuolo E, Brisdelli F, Mercuri PS, Cherubini S, De Sciscio ML, Maccarrone M, Galleni M, Amicosante G, Perilli M. Exploring the Role of L10 Loop in New Delhi Metallo- β -lactamase (NDM-1): Kinetic and Dynamic Studies. *Molecules*. 2021. 26(18):5489. doi: 10.3390/molecules26185489.
16. Ceccarelli G, Marazzato M, Celani L, Lombardi F, **Piccirilli A**, Mancone M, Trinchieri V, Pugliese F, Mastroianni CM, d'Ettorre G. Oxygen Sparing Effect of Bacteriotherapy in COVID-19. *Nutrients*. 2021. 13(8):2898. doi: 10.3390/nu13082898.
17. **Piccirilli A**, Mercuri PS, Segatore B, Galleni M, Brisdelli F, Kerff F, Amicosante G, Perilli M. Laboratory variants GES^{G170L}, GES^{G170K} and GES^{G170H} increase carbapenems hydrolysis and confer resistance to clavulanic acid. *Antimicrob Agents Chemother*. 2021. 65(6):e01931-20. doi: 10.1128/AAC.01931-20.
18. **Piccirilli A**, Segatore B, Brisdelli F, Amicosante G, Perilli M. Potent inhibitory activity of Taniborbactam towards NDM-1 and NDM-1 Q119X mutants, and "in vitro" activity of cefepime/taniborbactam against MBLs producing *Enterobacterales*. *Int J Antimicrob Agents*. 2021. 57(1):106228. doi: 10.1016/j.ijantimicag.2020.106228.
19. Pompilio A, Ranalli M, **Piccirilli A**, Perilli M, Vukovic D, Savic B, Krutova M, Drevinek P, Jonas D, Fiscarelli EV, Tuccio Guarna Assanti V, Tavío MM, Artiles F, Di Bonaventura G. Biofilm Formation among *Stenotrophomonas maltophilia* Isolates Has Clinical Relevance: The ANSELM Prospective Multicenter Study. *Microorganisms*. 2020. 9(1):49. doi: 10.3390/microorganisms9010049.
20. Barnabei R, Di Michele G, Cellini A, Amicosante G, Perilli M, Bellio P, **Piccirilli A**, Celenza G. Transient disappearance of CD19+/CD5+ B-Lymphocytes in peripheral blood in a patient with CLL during SARS-CoV-2 related mild disease. *Clin Case Rep*. 2021. 9(6):e04238. doi: 10.1002/ccr3.4238.
21. **Piccirilli A**, Brisdelli F, Docquier JD, Aschi M, Cherubini S, De Luca F, Matagne A, Amicosante G, Perilli M. Amino Acid Replacement at Position 228 Induces Fluctuation in the Ω -Loop of KPC-3 and Reduces the Affinity against Oxyimino Cephalosporins: Kinetic and Molecular Dynamics Studies. *Catalysts*. 2020. 10, 1474. doi:



10.3390/catal10121474. Corresponding author.

22. Ben Abderrazek R, Chammam S, Ksouri A, Perilli M, Dhaouadi S, Mдини I, Benlasfar Z, Amicosante G, Bouhaouala-Zahar B, **Piccirilli A**. Inhibitory Potential of Polyclonal Camel Antibodies against New Delhi Metallo- β -lactamase-1 (NDM-1). *Molecules*. 2020. 25(19): E4453. doi: 10.3390/molecules25194453.
23. Segatore B, **Piccirilli A**, Setacci D, Cicolani B, Di Sabatino A, Miccoli FP, Perilli M, Amicosante G. First Identification of β -Lactamases in Antibiotic-Resistant *Escherichia coli*, *Citrobacter freundii*, and *Aeromonas* spp. Isolated in Stream Macroinvertebrates in a Central Italian Region. *Microb Drug Resist*. 2020. 26(8):976-981. doi: 10.1089/mdr.2019.0258.
24. **Piccirilli A**, Perilli M, Piccirilli V, Segatore B, Amicosante G, Maccacaro L, Bazaj A, Naso L, Lo Cascio G, Cornaglia G. Molecular characterization of carbapenem-resistant *Klebsiella pneumoniae* ST14 and ST512 causing bloodstream infections in ICU and surgery wards of a tertiary university hospital of Verona (Northern Italy): co-production of KPC-3, OXA-48 and CTX-M-15 β -lactamases. *Diagn Microbiol Infect Dis*. 2020. 96(3):114968. doi: 10.1016/j.diagmicrobio. 2019.
25. Liu Z, **Piccirilli A**, Liu D, Li W, Wang Y, Shen J. Deciphering the Role of V88L Substitution in NDM-24 Metallo- β -Lactamase. *Catalysts*. 2019. 9(9),744. doi:10.3390/catal9090744.
26. **Piccirilli A**, Pompilio A, Rossi L, Segatore B, Amicosante G, Rosatelli G, Perilli M, Di Bonaventura G. Identification of CTX-M-15 and CTX-M-27 in Antibiotic-Resistant Gram-Negative Bacteria Isolated from Three Rivers Running in Central Italy. *Microb Drug Resist*. 2019. 25(7):1041-1049. doi: 10.1089/mdr.2019.0016.
27. **Piccirilli A**, Brisdelli F, Aschi M, Celenza G, Amicosante G, Perilli M. Kinetic Profile and Molecular Dynamic Studies Show that Y229W Substitution in an NDM-1/L209F Variant Restores the Hydrolytic Activity of the Enzyme toward Penicillins, Cephalosporins, and Carbapenems. *Antimicrob Agents Chemother*. 2019. 63(4). doi: 10.1128/AAC.02270-18.
28. **Piccirilli A**, Perilli M, Amicosante G, Conte V, Tascini C, Rossolini GM, Giani T. TEM-184, a novel TEM-derived extended-spectrum β -



	<p>lactamase with enhanced activity against aztreonam. <i>Antimicrob Agents Chemother.</i> 2018. 62(9). doi: 10.1128/AAC.00688-18.</p> <p>29. Piccirilli A, Mercuri PS, Galleni M, Aschi M, Matagne A, Amicosante G, Perilli M. P174E substitution in GES-1 and GES-5 β-lactamases improves catalytic efficiency toward carbapenems. <i>Antimicrob Agents Chemother.</i> 2018. 62(5). doi: 10.1128/AAC.01851-17.</p> <p>30. Sabatini A, Brisdelli F, Celenza G, Marcoccia F, Colapietro M, Tavio Maria M, Piccirilli A, Amicosante G. Interaction of carbapenems and β-lactamase inhibitors towards CTX-M-15 and CTX-M-15/G238C mutant. <i>J Glob Antimicrob Resist.</i> 2017. 10:95-100. doi: 10.1016/j.jgar.2017.04.004.</p> <p>31. Bottoni C, Perilli M, Marcoccia F, Piccirilli A, Pellegrini C, Colapietro M, Sabatini A, Celenza G, Kerff F, Amicosante G, Galleni M, Mercuri PS. Kinetic studies on CphA mutants: the role of the loop P158-P170 on the activity versus carbapenems. <i>Antimicrob Agents Chemother.</i> 2016. 60(5):3123-3126. doi: 10.1128/AAC.01703-15.</p>
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L'AQUILA, 29/03/2023