

INTERNAL NOTICE n° -02/2024- Postdoctoral Fellowships in the area of Antimicrobial Resistance Linked to the RIDC Project – FAPESP

UNIFESP makes public the granting of Postdoctoral Fellowships funded by FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo, <http://www.fapesp.br/>):

Objectives:

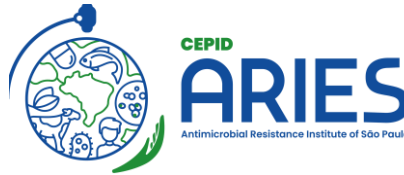
Selection of 8 (Eight) candidates with experience in health science and antimicrobial resistance for the category of Postdoctoral Fellowship linked to the CEPID Project 2021/10599-3: "Instituto Paulista de Resistência aos Antimicrobianos" (Project ARIES - INSTITUTE OF RESISTANCE TO ANTIMICROBIALS OF SÃO PAULO).

Duration:

The scholarships will last 24 (twenty-four) months and may be renewed for another 24 (twenty-four) months, according to FAPESP's Normative Instruction in force as of 09/01/2020 (<https://fapesp.br/bolsas/pd>). This funding is linked to the development of the following sub-projects:

Subproject 1 - Monitoring burden of fungal infections and resistance of yeasts and filamentous fungi to antifungals.

Expected Skills: Aspirants must have experience in the area of mycology and antifungal resistance, including investigations addressing different biological aspects related to human, animal, or environmental health. Additional skills required are familiarity with molecular identification of fungi, antifungal susceptibility testing, typing methods for



assessing intraspecific variability of yeasts and molds, real-time PCR assays, whole-genome sequencing, use of models to investigate fungal virulence, and analysis of gene expression by RNA-seq, proteomics, or metabolomics.

Academic history and publications: Candidates must have graduation in biomedical sciences with a curriculum including disciplines addressing topics related to the areas of mycology, genetic of microorganisms, antimicrobial resistance, molecular typing and epidemiology of resistance. They must have a solid track record of journal publications in the areas of pathogen genetics, cell signalization, antifungal susceptibility testing, fungal virulence studies, or molecular mechanisms of antifungal resistance.

Responsibilities: The candidate will conduct research in the area of antifungal resistance and molecular typing with a multidisciplinary team of researchers. He will have attributions including to plan, and carry out experiments, analyze and interpret results with the commitment of reporting major findings in scientific journals. Finally, candidates will have strong participation in preparing annual reports to FAPESP.

Location: The selected candidate will carry out his/her work primarily at UNIFESP Campus Sao Paulo or Diadema, with availability to travel and interact with researchers from other campuses and partner institutions of ARIES-CEPID.

Principal investigators and potential supervisors:

Prof. Dr. Arnaldo Lopes Colombo

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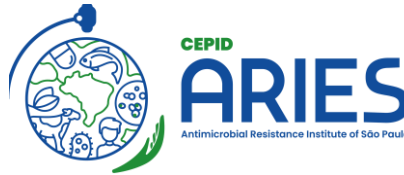
Subproject 2: Metabolomics applied to the diagnosis of bacterial and fungal infections due to resistant pathogens

Expected Skills: The candidate will be responsible for conducting projects aimed at developing strategies for the early recognition of antimicrobial resistance using metabolomic tools. To accomplish this, the candidate should be familiar with basic concepts of chemistry, biochemistry, metabolism, as well as general mechanisms of antimicrobial resistance. Candidates are expected to be capable of grasping, developing, and applying mass spectrometry techniques and utilizing metabolomic analysis software. Additionally, the candidate should be able to interact with various research groups within CEPID-ARIES.

Academic history and publications: Applicants should have a background in chemistry, chemical biology, or health science fields, demonstrating a strong academic history and publications in journals and conferences related to antimicrobial resistance, characterization of resistance mechanisms, and metabolomic assays applied to biomarker characterization and infectious disease diagnosis, including novel strategies for early recognition of infections by resistant pathogens.

Responsibilities: The researcher will conduct cutting-edge research in the field of antimicrobial resistance, collaborating with a multidisciplinary team of researchers to address challenging problems and contribute to ongoing projects. They will plan and execute experiments, analyze and interpret results, and present findings at conferences and in scientific journal publications.

Location: The work will primarily be carried out at the São Paulo or Diadema campuses of UNIFESP, or at the University of São Paulo (USP-Campus São Paulo), with



availability to travel and interact with researchers from other campuses and partner institutions of ARIES-CEPID.

Principal investigators and potential supervisors:

Prof. Dr. Ana Cristina Gales

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Prof. Dr. Sergio Schenkman

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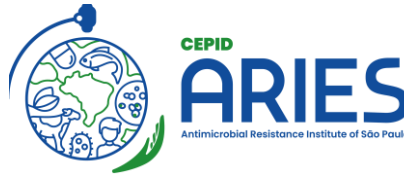
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SUBPROJECT 3: Bioinformatics Applied to investigation of antimicrobial resistance under the perspective of one health

Expected Skills: The ideal candidate for this position should possess expertise in various pipelines utilized for genomic data analysis, encompassing both short and long reads generated from Next-Generation Sequencing (NGS) technologies. They should be adept at crafting diverse workflows tailored for the analysis of DNA and RNA sequencing data. Proficiency in managing biological databases and utilizing a range of tools and software is essential. Additionally, the candidate should be skilled in applying statistical models to biological datasets and demonstrate familiarity with public biological data repositories. As for the characteristics of a bioinformatics postdoc, proficiency in Python and/or R programming languages is required, along with a solid understanding of the Bash Linux environment and commands.

Academic history and publications: The candidate should have an undergraduate degree in the health sciences field and advanced knowledge in bioinformatics. It is expected that the candidate demonstrates in their academic history publications in



journals and conferences in the areas of bioinformatics machine learning, data science, or related fields. We value innovative research contributions and the ability to effectively communicate ideas through academic publications.

Responsibilities: As a postdoctoral researcher, the individual will participate in cutting-edge research in bioinformatics, machine learning and data science, exploring innovative algorithms and methodologies. They will collaborate with a multidisciplinary team of researchers to address challenging problems and contribute to ongoing projects. This includes designing and implementing experiments, analyzing and interpreting results, and presenting findings through conference presentations and journal publications.

Location: The activities will primarily take place at the UNIFESP campuses in São Paulo and São Jose dos Campos, with availability to travel and interact with researchers from other campuses and partner institutions of ARIES-CEPID.

Principal investigators and potential supervisor:

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Subproject 4: Metabolomics Applied to Novel Strategies for Antimicrobial Resistance Control and Treatment

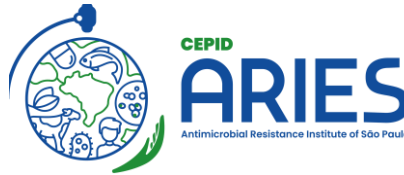
Expected Skills: Candidates should possess knowledge of omics methodologies and the ability to develop new applications in the prevention, diagnosis, and treatment of



infections caused by resistant pathogens. Therefore, the candidate should have experience in diagnostic metabolomics, including sample preparation and standardization methods for both targeted and untargeted metabolomic analyses, particularly of biological fluids, cells, and tissues. The candidate should also be familiar with the hyphenated platform of high-resolution liquid chromatography-mass spectrometry tandem (UHPLC-HRMS, MS/MS), with Quadrupole-time-of-flight (QTOF) and/or Orbitrap analyzers. We also seek candidates with knowledge of bioinformatics tools for sample dereplication and searching in online public databases, such as HMDB (Human Metabolome Database), Metlin, MassBank, among others. Additionally, it is desirable for the candidate to be able to perform statistical analyses to extract relevant information from mass spectrometry data using multivariate and univariate analysis methods. The ideal candidate should have experience in operating mass spectrometry equipment.

Academic and publication history: Priority will be given to candidates with a background in Chemistry and Chemical Biology (highest score), but we will evaluate the relevance of candidates trained in Health Sciences areas who demonstrate consolidated experience in the subject matter and completion of their doctorate within the last seven years. Candidates are expected to have publications in the areas of general or diagnostic metabolomics in internationally circulated journals. We value innovative research contributions and the ability to communicate ideas effectively through academic publications.

Responsibilities: As a postdoctoral researcher, it is expected that the individual will develop and optimize sample preparation procedures for blood and urine to ensure comprehensive coverage of the metabolome in these complex matrices. They will also adapt current targeted and untargeted metabolomic platforms based on HPLC-MS-MS for the specific needs and characteristics of these matrices and refine current workflow processes for data processing and metabolite annotation using open-access databases and bioinformatics tools for the specific needs of the human metabolome. Furthermore, they will collaborate with a multidisciplinary team of researchers to address challenging



problems and contribute to ongoing projects. This includes designing and implementing experiments, analyzing and interpreting results, and presenting findings through conference presentations and journal publications.

Principal investigators and potential supervisor:

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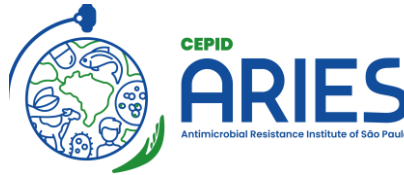
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Subproject 5 - APPLICATION OF SUCCESSFUL INTERVENTIONS TARGETING SOCIAL IMPACT AND PUBLIC HEALTH

Expected Skills: The postdoctoral fellow should be able to develop applied research in health policies and systems aiming to: i) establish an Advanced Center in AMR to support policymakers in designing, implementing, and evaluating innovative strategies to contain AMR to the Unified Health System (SUS); ii) provide an international overview on AMR containment strategies by comparative studies on health system's AMR containment plans and analyze the translation of global initiatives into local practices; iii) analyze AMR containment plan in the Brazilian health system by case-studies and iv) contribute to Education, Translation, and Innovation by preparing policy Briefs, executive training platform on AMR, Training course for SUS managers on AMR, etc.

Academic History and publications

1. A PhD degree in Public Health, Health Management, Health Policy, Public Administration, or related fields.
2. Experience in handling and processing survey
3. Knowledge and skills to comfortably use qualitative and quantitative methods in health policy and systems research
4. Excellent communication skills in English, both written and oral and ability to work as a team.



Main responsibilities

- The postdoc will pursue his/her own research agenda in agreement with the main objectives of the ARIES-CEPID
- The postdoc is expected to produce at least one article per year for publication in international journals (public health, public administration, and/or social science)
- Collaboration with other members of the ARIES project
- Collaboration in advising BA and MA students, as well as some administrative tasks
- Collaboration with other members of the research group is highly encouraged

Location:Activities will be based within the São Paulo School of Business Administration, Getulio Vargas Foundation(FGV EAESP), São Paulo, Brazil, under the supervision of Dr. Adriano Massuda. There will be active collaboration with UK and US partners, including the possibility of spending up to one year abroad. Finally, the selected candidate must be available for participation in academic activities and meetings organized in different campuses of UNIFESP and other partner institutions of ARIES-CEPID.

Principal investigators and potential supervisor:

Prof. Dr. Adriano Massuda

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Subproject 6: New strategies for environmental disinfection and skin decolonization by MDR pathogens

Expected skills: Applicants must have proven experience in the synthesis of metallic and polymeric nanometric materials, hydrogels, and their characterization including size analysis, and physicochemical, electrochemical, biochemical, and genomic analyses. Furthermore, the applicants will be responsible for *in vitro* and *in vivo* experiments. Additionally, they need to demonstrate potential for developing scientific independence, motivation for science, a track record of scientific publications proving their academic potential, and mastery of the skills required for the subproject.

Publication history: Competitors should have a solid history of publications in journals and conferences in nanomaterials, antimicrobial action, and targeted delivery systems.

Responsibilities: The researcher will conduct research in antimicrobial resistance and collaborate with a multidisciplinary team of researchers to address challenging issues and contribute to ongoing projects. Responsibilities will include planning and conducting experiments, analyzing, and interpreting results, and presenting findings at conferences and in scientific journals.

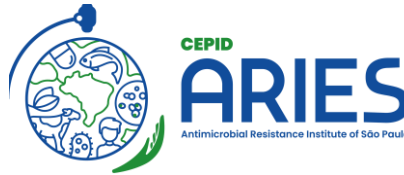
Principal investigators and potential supervisor:

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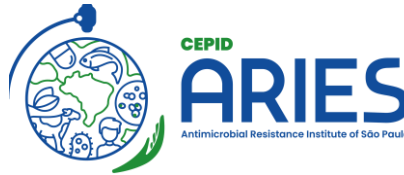
Subproject 7: Innovation Management in AMR: Ecosystems and Startup Creation and Scalability.

Expected Skills: Competitors must possess robust research planning skills, both qualitative and quantitative, in the field of business, in order to better understand the dynamics of innovation in AMR. It is crucial to have a comprehensive understanding of innovation ecosystem theory, resource-based view, entrepreneurship, innovation management, and strategy. Additionally, candidates should be able to monitor and manage research progress effectively, including assessing the Technology Readiness Level (TRL) of AMR research projects.

Publication Record: Aspirants should have a solid track record of publications in journals and conferences in the area of strategy, technology-based entrepreneurship, startups, ecosystems, and innovation management.

Responsibilities: Researchers will be involved in conducting cutting-edge research in the areas of strategy, startups, ecosystems, and innovation management, especially in the context of AMR research. A key component of this role includes data collection through various methods such as project meetings, obtaining secondary data, conducting in-depth interviews, document analysis, and database management. Additionally, they will assess the TRL of AMR research projects to facilitate the creation of startups and/or partnerships with companies. They will design and implement: support tools for spin-offs, data collection and analysis protocols, and technology entrepreneurship development in the context of AMR research.

Location: The researcher will primarily work at the University of São Paulo (FEA-USP), with availability to travel and interact with researchers from other campuses and partner institutions of ARIES-CEPID. The focus will remain on fostering the innovation ecosystem in AMR and encouraging potential startups within the scope of this project.



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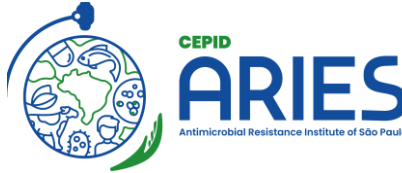
Subproject 8: Modeling the Burden of Disease of Infections Caused by Resistant Microorganisms

Expected skills: Applicants must have a PhD degree in Physics, Applied Computing, Applied Mathematics, Industrial Mathematics, or Systems and Control Engineering. Applicants who are in the final stages of completing their PhD may also be considered. Background in applied dynamical systems, agent modeling, time series analysis, machine learning, and scientific computing; and Proficiency in Python language and Octave/Matlab.

Publication history: Candidates should have a solid track record of publications in journals and conferences in the field.

Responsibilities: The successful candidate will be involved in innovative research projects aimed at understanding and modeling the dynamics of infections caused by resistant microorganisms. They will utilize advanced computational techniques and mathematical modeling to analyze complex data sets and generate insights that inform strategies for disease management and intervention.

Location: The activities will primarily take place at the UNIFESP campuses in São José dos Campos and São Paulo, with availability to travel and interact with researchers from other campuses and partner institutions of ARIES-CEPID.



Principal investigators and potential supervisors:

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Prof. Dr. Elbert E Nehrer Macau

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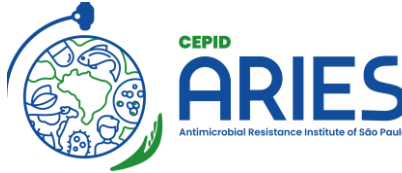
GENERAL INFORMATION

Selection criteria and required documents:

1. Candidate requirements for all subprojects:

- a) Candidates must have completed the doctorate with a topic related to the subproject of interest for less than 7 (seven) years;
- b) Applicants must dedicate themselves fully to the research project;
- c) Fellows may not have an employment relationship, nor receive, during the entire duration of the scholarship, another scholarship from any entity, salary or remuneration from work activities of any nature, except those observed in FAPESP's PR Ordinance No. 05/2012;
- d) Candidates must demonstrate potential to develop scientific independence, motivation for science, history of scientific publications that prove their academic potential and proven mastery of the skills required for the subproject in the application of this notice;
- e) Applicants must have English language skills for reading, scientific writing and speaking.

2. Documents to be sent to all subprojects:



- a) Curriculum Lattes for Brazilian candidates or the Curriculum Vitae for foreign candidates;
- b) ORCID with link to the publications;
- c) Applicant's motivation letter summarizing his/her adherence to the prerequisites and skills required in the selected subproject (less than 500 words and written in English);
- d) Two letters of recommendation and The contact details of two people willing to serve as a reference
- e) Certificate or letter proving proficiency in the English language for applicants from countries where English is not the native language;
- f) Doctoral diplome or official letter from the Student Administration of the University in question certifying the defense of the thesis and the date of completion of the doctorate.

3. Registration:

The scholarships are open to candidates of any nationality. Applications are open until 6pm (GMT-3) on May 15, 2024, and must be formalized through a message sent to the following email address, highlighting in the subproject for which the candidate is applying.

Email address: cepid-aries@unifesp.br

Applicants must be available to be interviewed via *Google Meet* at the time the organizing committee of this process define to conduct the call. Invitation will be divulgated to the candidates with at least one week of antecedence.

Final provisions:

The selection process for all applications will be based on the individual analysis of the academic merit illustrated in the candidate's resume. After the merit review, virtual interviews will be scheduled with qualified candidates. Applicants whose resume and motivation letters are deemed insufficient will not be invited to the virtual interview. The



whole process will be coordinated by Prof. Dr. Arnaldo Lopes Colombo, with the participation of the supervisors mentioned in the application of the project.

There is no need for equity in the final distribution of candidates presenting applications to the mentioned projects. If some subprojects receive more QUALIFIED applicants than others, applications considered outstanding may be reallocated to occupy scholarships initially provided to other subprojects.

After selection, the candidate's documents and the research project will be submitted to FAPESP for final approval. The fellow will receive a postdoctoral fellowship in the amount of R\$ 9,047.40 (nine thousand and forty-seven reais and forty cents) monthly and a research contingency fund equivalent to 10% of the annual scholarship to subsidize academic activities related to the research project. Applicants residing more than 350 km from São Paulo-SP, Brazil, may apply: a) installation assistance, consisting of a single additional portion of the scholarship; b) resources to cover land and/or air transportation expenses, always in a promotional or economic category.

For more information, please contact:

FAPESP Post-doctorate: www.fapesp.br/bolsas/pd

UNIFESP: <https://www.unifesp.br/world/images/arquivos/International%20Students%20and%20Researchers%20guide%20-%202024.01.19-compressed.pdf>

São Paulo, March 2024

Prof. Dr. Arnaldo Lopes Colombo, Ph.D., M.D.

Coordinator of ARIES-CEPID UNDC

Full Professor of the Infectious Diseases

Department of Medicine – UNIFESP/EPM