

## CALL FOR APPLICATION

### INSERM CHAIR Recruitment

## Bacterial immunity, phagotherapy and new therapies to combat antibiotic resistance

The Inserm chair recruitments opened to Inserm are intended for researchers with strong potential to manage and lead research teams and participate in national, European or international projects.

This recruitment, based on research and teaching projects, is aimed at researchers with a doctorate or equivalent and a first post-doctoral experience. The position is offered on a fixed-term contract (CDD) with a view to tenure in the Inserm Research Directors personnel at the end of the contract.

Application on EVA: <https://eva3-accueil.inserm.fr/sites/eva/chaieres/2024/Pages/default.aspx>



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| <b>Supporting institution:</b>              | Inserm : Institut national de la Santé et de la recherche médicale   |
| <b>Name of the head of the institution:</b> | Pr. Didier Samuel  |
| <b>Academic region:</b>                     | Lyon   |
| <b>Location/ Site concerned:</b>            | Inserm U1111 - Centre International de Recherche en Infectiologie (CIRI)<br><a href="https://ciri.ens-lyon.fr/">https://ciri.ens-lyon.fr/</a>                              |
| <b>Partner institutions:</b>                | <i>Université Claude Bernard Lyon 1 (UCBL1) ; CNRS, ENS Lyon</i>   |
| <b>Research contact:</b>                    | Thierry WALZER: <a href="mailto:thierry.walzer@inserm.fr">thierry.walzer@inserm.fr</a><br>Thomas HENRY: <a href="mailto:thomas.henry@inserm.fr">thomas.henry@inserm.fr</a> |
| <b>Administrative contact:</b>              | <a href="mailto:chaieres-professeur-junior@inserm.fr">chaieres-professeur-junior@inserm.fr</a>   |
| <b>Research fields EURAXESS :</b>           | Immunity, microbiology, Infection (Medical sciences)   |
| <b>Keywords:</b>                            | phages, bacteria, immunity, therapy  |

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| <b>Job title to be filled:</b>               | Chaire - Bacterial immunity, phagotherapy and new therapies to combat antibiotic resistance |
| <b>Body after tenure:</b>                    | Research Director   |
| <b>Anticipated duration of the contract:</b> | 3 years   |

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| <b>Scientific domains/fields:</b>                              | Life Sciences (Immunity, Infection and Immunotherapy/<br>Molecules of life: biological mechanisms, structures and functions). |
| <b>Corresponding specialized scientific commissions (CSS):</b> | CSS 5 - Immunity, microbiology, Infection   |
| <b>Project name:</b>   | Bacterial immunity, phagotherapy and new therapies to combat antibiotic resistance  |

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| <b>Remuneration package</b> | 3 500€ - 5 000€ according to research experience |
| <b>Quota</b>                | Full Time  |

### Strategy of the host institution:

The host institution aims to strengthen the knowledge on bacterial immunity against phages and to develop phagotherapy and/or novel strategies to fight antibioresistance in bacteria.

The CPJ project should provide the fundamental basis to understand, support and/or develop the translational theme of phagotherapy in conjunction with the PHAGEinLYON project at Hospices Civils de Lyon.

### Strategy of the host laboratory:

The overall objective of the Centre International de Recherche en Infectiologie (CIRI) is to "understand the interactions between microbes and their hosts in order to better fight infectious diseases".

The strategy of the host laboratory is to develop fundamental research on bacteria and their interactions with phages with the long-term goal to promote the rationale development of phagotherapy.

The fundamental study of bacterial immunity against phages/ resistance mechanisms against phages may open prospects for the identification and understanding of certain immune mechanisms and their evolution from prokaryotes to man.

The proposed position fits in the three specialties of the CIRI: Bacteriology-Immunology-Virology and the recruited researcher is expected to interact with researchers from the different specialties.

Bacteriology at CIRI includes two National Reference centers (*Staphylococcus* and *Legionella*) with a large collection of clinical strains that could synergize with the scientist project.

### Summary of the scientific project:

The increasing prevalence of antibiotic resistance calls for the development of alternative therapies to antibiotics. Among these, phage therapy is particularly promising, but requires a better understanding of bacteria-phage interactions.

Bacteria have developed numerous immune mechanisms (e.g., CRISPR/Cas9 system) against bacteriophages. Interestingly, a number of these systems are conserved in eukaryotes (cGAS, Gasdermin...), including humans.

A better understanding of the mechanisms by which bacteria escape phages could help in the rational development of phage therapy but could also provide an original perspective on eukaryotic immune responses.

We expect the recruited scientist to develop a project to better understand bacterial immunity/resistance to phages and/or to develop a project allowing a more controlled development of phagotherapy. Broader antibacterial therapies allowing to fight antibioresistance may be considered.

### Summary of the teaching project:

The recruited scientist will teach in several UCBL1 courses including the Microbiology master -M2 molecular microbiology, pathogenesis, microbial ecology and the Molecular and Cellular Biology master-Infectiology section.

### National Research Agency package:

200k€

### Scientific communication and dissemination, Science and society:

**Scientific communication and dissemination:** The research will be published in peer-reviewed journals. Scientific communication will also occur through presentations at international scientific meetings. Inserm, UCBL1, CNRS and ENS de Lyon press services will be also contacted for dissemination to the public. Dissemination via the CIRI Twitter and website will also take place. Whenever applicable, patents will be deposited in tight collaboration with Inserm transfer or the Pulsalys SATT.

**Open Science:** All the publications will be deposited in the HAL open archives system. The researcher will be encouraged to submit to preprint server (e.g. BioRxiv).

**Science and society:** This project should provide the fundamental bases for a rationale for the development of phagotherapy or to better understand the chance of success/ the risk of failure of a given therapy against a particular pathogenic bacterium. In front of the rise of antibiotic resistance, the development of novel therapies is key for public health. Popularization conferences will be held in events such as fête de la Science.

### Indicators:

Teaching: the integration of the recruited scientist in the different Masters of University Claude Bernard Lyon 1 will be evaluated. The ability to recruit, train and mentor students and post-docs will be evaluated

Research: The ability of the scientist to obtain grants, publish high impact papers, obtain patents, communicate her/his science at international conferences and integrate/interact with the host institute will be evaluated.

Knowledge transfer: The ability of the scientist to communicate to the via websites, articles and/or press release will be evaluated.

### Selection of candidates:

It is expected that the recruited researcher will rapidly become a group leader at CIRI. So the candidate should demonstrate ability to supervise Ph.D students, post-doctoral fellow and technical support staff. She/he should have the capacity to obtain competitive funding to manage her/his group.

Successful candidates are chosen by a selection commission composed of six to ten members, the majority of whom are specialists in the fields of research concerned.

The commission carries out an initial examination of the applications, focused in particular on candidate experience and skills relative to the research and teaching project presented above. A shortlist of candidates is then selected for interview.

Only candidates selected by the selection committee on the basis of their applications will be invited to interview.

The interviews are followed by a deliberation during which selection commission will discuss the quality, originality and, where appropriate, the interdisciplinarity of the research and teaching projects presented by the candidates, their motivation and their scientific and teaching supervision capacity.

The candidates selected at the end of the selection process will be offered a researcher contract, following approval from the President and CEO of Inserm.

### Required profile:

Education Level : **Phd**

Researcher Profile : R3/R4

*R3 Established researcher A stage in a researcher's career describing those who have developed a level of independence and can be described as an established researcher*

*R4 Leading Research A stage in a researcher's career where they can be termed a 'leading researcher'. This would include the team leader of a research group or head of an industry R&D laboratory.*

Your application will be evaluated according to the following criteria:

- Relevance and originality of the project related to the research field
- International exposure in research projects
- Your ability to raise funds
- Participation in editorial and reviewing activities
- Your teaching experience
- Your ability to lead a team...

### Application instruction:

Applications can be submitted online at [EVA](#).

Deadline application: **April 2, 2024**

*Please complete the scientific file in English.*

***It is imperative to contact the laboratory corresponding to the Chair you have applied for in order to build the project with them.***

Position also open to 'Bénéficiaires de l'Obligation d'Emploi' (disabled persons), as defined in article 27 of law no. 84-16 of January 11, 1984 on statutory provisions for the civil service.