



## 18-months postdoc position (*renewable*) in Mathematical modelling applied to quantitative antimicrobial resistance

**Working place & Conditions.** A postdoc position in applied mathematics is available at the [IRD](#) in Sénégal. The position is based at Thiès (École polytechnique) and will start on March 1st 2022, with an attractive salary.

**Job description.** In view of the multiple pathogen evolution capabilities, the long-term efficacy of antimicrobials is a major public health problem. Defining sustainable strategies for managing antimicrobials efficiency, in space and time, by considering the continuous character of antimicrobial resistance –*ie.* quantitative resistance– with varying degrees of intermediate resistance. The project is aiming to develop Mathematical/Computational models for quantitative antimicrobial resistance at both between- and within-host scales. The successful candidate will develop mathematical models through an approach combining predictive mathematical analysis, scientific computing, optimization-control of an integro-differential system with non-local terms. The successful candidate will be involved in a project funded by the [ANR](#), and will collaborate with a team of applied mathematicians with strong experience in Mathematical/Computational modelling of infectious diseases.

### Targeted profile.

- Strong experience in mathematical modeling (including ODE and PDE).
- Strong experience in numerical simulations of models.
- Additional knowledge in optimal control theory as well as an experience in epidemiology or evolutionary modeling are not necessary but will be considered positively.
- Ability to work in an interdisciplinary project involving mathematicians and biologists.

**Application procedures & Contact.** Send your application in a single PDF file by email to Ramsès Djidjou-Demasse ([ramses.djidjoudemasse@ird.fr](mailto:ramses.djidjoudemasse@ird.fr)). Your application must include (i) a letter stating your motivations for this project, (ii) a CV including the names of two referees (with e-mail addresses). You can title your email "Postdoc application - Modelling qAMR". You can contact ([ramses.djidjoudemasse@ird.fr](mailto:ramses.djidjoudemasse@ird.fr)) for any further information.

### Some references.

- F. Blanquart. Evolutionary epidemiology models to predict the dynamics of antibiotic resistance. *Evolutionary applications*, [PDF](#) 2019.
- R. Djidjou-Demasse, M. T. Sofonea, M. Choisy, S. Alizon. Within-host evolutionary dynamics of antimicrobial quantitative resistance. *Peer Community in Mathematical and Computational Biology*, 2021. [PDF](#).
- R. Djidjou-Demasse, Samuel Alizon, Mircea T. Sofonea. Within-host bacterial growth dynamics with both mutation and horizontal gene transfer. *Journal Of Mathematical Biology*, 2021. [PDF](#)