

## Job Title

PROJECT - Virome@tlas

One year Research Engineer- Virome biogeography front end developer

## Job Contract

- Status: Contract
- Job category: A
- Speciality/field: front end developer, dataviz, big data, bioinformatics, large-scale approaches, viral metagenomics
- Contract: CDD
- Desired number of hours: 100%
- Contract duration: 12 months
- Desired start date: from February 2026 (negotiable)

## Job Missions

### Context:

University of Lyon 1, in collaboration with 11 partners, is coordinating the SHAPE-Med@Lyon project ([www.shape-med-lyon.fr](http://www.shape-med-lyon.fr)). The **Virome@tlas project** - was recently granted a prize by the SHAPeMed@Lyon consortium as part of the call for structuring projects 2023 - **develops a digital platform dedicated to virosphere monitoring**. This collaborative project is led by the PRABI-AMSB platform (UCBL1, FR BioEEnViS - <http://amsb.prabi.fr>), the Environnement Ville et Société laboratory (Lyon2 - <https://umr5600.cnrs.fr>), the Centre International de Recherche en Infectiologie (HCL, GENEPII platform - <https://teamhcl.chu-lyon.fr/genepii>) and the Infections Virales et Pathologies Comparées laboratory (INRAE - <https://ipvc.lyon-grenoble.hub.inrae.fr>) in partnership with the Biométrie et Biologie Evolutive laboratory and the Institut Français de Bioinformatique (NNCR cloud). The Virome@tlas project is recruiting an **engineer to work on the biogeographical visualisation of the virosphere at global scales**. This work will be carried out within an interdisciplinary “One Health” framework involving scientists with strong expertise in the fields of bioinformatics, metagenomics, molecular evolution, virology, geography, hydrology and geomatics.

### Main missions:

The primary mission of the research engineer is to develop a **highly performant front-end portal for exploring the interactions between viruses, hosts, and the environment at a global scale**. This website will rely on massive data deposited in the Peta-bytes archives (up to million polygons and points) and will be used as a framework to improve our understanding of the viral transmission between human, animal and their diffusion in the environment. This open access platform will be valuable for the scientific community to easily identify host organisms (animal, human) or environmental biosamples (freshwater, soil, wastewater) harboring new virome signatures. This comprehensive and up-scaled systems-level platform will improve our preparedness and surveillance systems to help prevent the potential next epidemic **by identifying global biogeographical rules and patterns involved in the virosphere evolution and adaptation, particularly in the context of global environmental change and climate warming**.

### Main activities:

The main activity of the recruited engineer will be to develop a website to explore at large scales (e.g. biomes, ecosystem, watershed, virus/host taxonomy ...) the complex molecular, ecological and biogeographical factors responsible for future zoonotic spillover (Olival et al., 2017) - i.e. the transmission of animal viruses to human individuals - or their spillback - i.e. the transmission of human viruses to animals or in the environment. This visual exploration strongly relies on a comprehensive catalogue of virus/host associations, occurring

[www.shape-med-lyon.fr](http://www.shape-med-lyon.fr) | [contact@shape-med-lyon.fr](mailto:contact@shape-med-lyon.fr)

in human and animal populations, as well as an in-depth annotation of their geospatial and temporal distribution. The candidate will benefit from the technical support and expertise of three highly qualified research engineers in bioinformatics and geomatics with the aim of integrating and annotating the quality of biogeographic and sequencing data and metadata stored within the virome@tlas datalake. A large fraction of the virus's host range spectrum remains understudied, thus neglecting an integrated and interconnected vision of global health. As a result, only a limited number of virus/host associations are described in public databases, and the majority of them are biased toward human viruses and or viruses causing diseases. In addition, the influence of biophysical environment and their contemporary changes (e.g., deforestation, urbanization, increasing aridity) on these virus-host associations remains unknown. To tackle this problem, the engineer fellow will integrate existing visualisation framework developed by our team (lifemap, virhostrange ...) along with geographic map (openlayer, deckgl, leaflet ...) to help our interdisciplinarity team to highlight **yet undiscovered virus/host/environment relationships** and annotate **potentially putative new spillover/spillback events** from the mining of millions of SRA biosamples and their associated billion of SRA-STAT taxonomic assignments already stored in our Virome@tlas data-lake. The candidates will also promote the development of new use cases through Hackathon in collaboration with the Virome@tlas consortium, ShapeMed@Lyon and the FR BioEEnviS partners to promote One Health and global-scale approaches.

## Job profile

### Expected skills

- Front-end (HTML, CSS, JavaScript, One of the React, Angular, Vue framework)
- Python programming (Dash, FLASK, geospatial python package), Linux, relational databases/NOSQL
- Multivariate analysis (PCA, PLS, UMAP, tSNE, DBSCAN) and exploratory spatial data analysis
- Network and data sciences
- Machine learning

### Knowledges:

- Bioinformatics
- Virology
- Environmental metagenomics
- Biogeography
- Geomatics

### Know how:

- Responsive to OneHealth concept
- Ability to work in project mode with a multidisciplinary team of engineers and researchers
- Responsiveness, autonomy, initiative, rigor
- Organizational skills
- Team spirit and sense of collaboration
- Ability to work as part of team, using modern digital tools

## Job location

### Laboratory :

City: Lyon, France

Laboratory/Service : Pôle Auvergne-Rhône-Alpes de Bioinformatique- Analyse et Modélisation des Systèmes Biologiques (PRABI-AMSB) / FR BioEEnviS

### Other:

Diploma required: PhD or engineer diploma in systems molecular ecology or bioinformatics or environmental virology or biogeography/geomatics

Software/Programming: Jupyter Notebook, R, IDE visual studio code, Linux, python

Expected experience: PhD or Engineer

## Application procedure:

Deadline for submission : January 2026

Submit your CV, a cover letter, and two academic references to :

Last name & First name: NAVRATIL Vincent

Position: Responsable scientifique PRABI-AMSB

Mail : [vincent.navratil@univ-lyon1.fr](mailto:vincent.navratil@univ-lyon1.fr)

Last name & First name: NAVRATIL Oldrich

Position: Enseignant chercheur

Mail : [oldrich.navratil@univ-lyon2.fr](mailto:oldrich.navratil@univ-lyon2.fr)