

Postdoctoral Researcher

Functional Genomics of LCCL-Domain Proteins in *Cryptosporidium*

Location : Reims, France

Laboratory : ESCAPE Research Unit, University of Reims Champagne-Ardenne (URCA)

Contract : 24-month postdoctoral position

Starting date : January 2027

Funding : Coefficient Giving (USA)

The position

The ESCAPE Research Unit at the University of Reims Champagne-Ardenne (URCA) is seeking a motivated and creative **Postdoctoral Researcher** to investigate a poorly characterized family of *Cryptosporidium* proteins containing LCCL domains.

The position is part of a newly funded research program supported by **Coefficient Giving (USA)**. The project aims to establish the functional relevance of LCCL-domain proteins in *Cryptosporidium* and identify candidate proteins associated with the formation and development of infectious parasite stages. LCCL domains are found in proteins associated with developmental and structural processes in several Apicomplexa, but their biological functions in *Cryptosporidium* remain poorly understood. Our preliminary observations point to a group of LCCL-domain proteins associated with the **crystalloid body (CB)**, a distinctive structure observed during parasite development (Fig. 1). The central objective of the project is to move from this initial observation to functional evidence by systematically testing candidate LCCL-domain proteins.

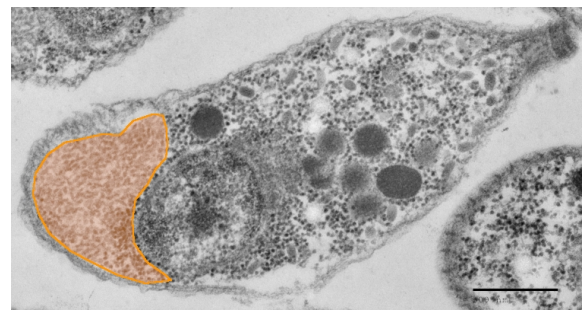


Fig. 1 – *C. parvum* sporozoite captured by transmission electron microscopy. The crystalloid body is highlighted in orange. 20,000x magnification. Scale bar = 500 nm. Own data (unpublished).

Research program

The project will establish a **targeted CRISPR-based functional screening strategy** for LCCL-domain proteins in *Cryptosporidium*.

The postdoctoral researcher will :

- establish and optimize a targeted **CRISPR screen of LCCL-domain protein genes** ;
- generate and analyse genetically modified *Cryptosporidium* lines ;
- develop robust phenotyping assays to identify candidate genes associated with parasite development ;
- prioritize LCCL-domain proteins on the basis of genetic and phenotypic evidence ;
- validate the most promising candidates through independent genetic perturbations ;
- characterize the resulting phenotypes using molecular and microscopy-based approaches ;
- investigate the localization and cellular context of selected LCCL-domain proteins ;
- establish the first functional links between LCCL-domain proteins and parasite developmental processes ;
- generate **discovery data** providing the foundation for subsequent mechanistic studies ;
- contribute to the preparation of manuscripts and future research proposals arising from the project.

The project is deliberately designed as a **discovery program**. The successful candidate will therefore have an important role in deciding how promising candidates should be followed up as new results emerge. The initial screening and phenotyping strategy will provide a framework that can subsequently be extended to additional candidate proteins and biological questions.

Why this project ?

Despite the increasing availability of genomic and genetic tools for *Cryptosporidium*, many parasite proteins remain functionally uncharacterized. This project focuses on a particularly interesting group of proteins defined by the presence of LCCL domains and associated with a poorly understood parasite structure. Rather than starting from an established molecular pathway, the project will use functional genomics to discover which components actually matter. The successful candidate will therefore have the opportunity to contribute to the early stages of a research program, from candidate discovery and genetic screening to the identification of new biological functions.

The project is expected to generate the discovery data and candidate prioritization required to support subsequent mechanistic investigations and larger-scale research programs.

Scientific environment

The researcher will join the **ESCAPE Research Unit** at the University of Reims Champagne-Ardenne. ESCAPE is a multidisciplinary research unit studying parasite biology, epidemiology and host–parasite interactions, with expertise spanning protistology, parasitology, molecular biology, ecology, immunology and vector biology. The project will benefit from access to molecular biology, microscopy and other research platforms at URCA, as well as collaborations with national and international groups working on apicomplexan parasites.

The project is supervised by **Valentin Greigert**, infectious diseases physician and researcher in parasitology, whose research focuses on the biology, host–parasite interactions and treatment of apicomplexan parasites, including *Cryptosporidium* and *Toxoplasma gondii*.

Candidate profile

We are looking for a highly motivated researcher with an interest in **functional genomics, parasite biology and molecular mechanisms of development**.

Required qualifications

- PhD in parasitology, microbiology, molecular biology, cell biology, infection biology or a related field ;
- strong experience in experimental molecular or cellular biology ;
- ability to design, perform and analyze experiments independently ;
- good scientific writing and communication skills ;
- ability to work effectively in a collaborative and multidisciplinary environment.

Desirable experience

Experience in one or more of the following areas will be particularly valued :

- CRISPR/Cas-based genome engineering ;
- functional genomics or genetic screening ;
- *Cryptosporidium* or other Apicomplexa ;
- parasite culture and genetic manipulation ;
- fluorescence microscopy or live-cell imaging ;
- quantitative phenotyping ;
- molecular characterization of proteins.

Experience with *Cryptosporidium* is **not required**. Candidates with experience in other Apicomplexa, microbiology, cell biology, developmental biology or functional genomics are encouraged to apply. We particularly welcome candidates who enjoy discovery-driven research, are comfortable developing experimental approaches, and are motivated by projects in which the most interesting results may emerge from unexpected phenotypes.

What we offer

- A **24-month fully funded postdoctoral position** ;
- a discovery-driven research project focused on a poorly characterized family of *Cryptosporidium* proteins ;
- the opportunity to establish and apply functional genomic approaches in an emerging parasite model ;
- substantial involvement in experimental design and interpretation ;
- access to a multidisciplinary research environment and relevant technological platforms ;
- opportunities for national and international collaboration ;
- the opportunity to generate novel discovery data and contribute to publications and future research programs.

Application

Applications should include :

- a **CV**, including a complete list of publications ;
- a short **cover letter** describing the candidate's scientific background, research interests and motivation for joining the project ;
- contact details for **two academic referees**.

Applications should be sent to :

Dr Valentin Greigert : valentin.greigert@univ-reims.fr

Application deadline : Oct. 31st 2026

Expected starting date : January 2027, with some flexibility depending on the candidate's availability.