



Un été ensoleillé avec prévision de science

05 – Molecular interactions of herpes simplex virus with its host

Accepted Academic Levels (in progress):

☐ College ☒ Bachelor's ☐ First-cycle PhD ☐ Master's

Research Team

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Research Project Description

Our laboratory is particularly interested in host–pathogen interactions to understand how viruses manipulate us to promote their own propagation. Among other things, we investigate cellular proteins that are incorporated into viral particles released from cells infected with herpes simplex virus type 1 (HSV-1) or coronaviruses. Through this work, we identified DDX3X as a critical component of HSV-1. As expected, this RNA helicase plays a role in viral gene expression, but intriguingly, it also contributes to the transport of newly assembled viral capsids across the two nuclear membranes. This process depends on a viral nuclear egress complex with which DDX3X interacts. A parallel proteomic study identified PCBP1, a cellular protein associated with the nuclear capsids. The literature suggests that DDX3X and PCBP1 may bind to each other. Our working hypothesis is that this interaction indeed occurs and modulates capsid egress from the nucleus.

Role of the candidate during the internship

The goal of the internship is to determine, through co-immunoprecipitation, whether DDX3X and PCBP1 interact with each other and to define how the virus modulates this interaction. The project involves a variety of experimental approaches, including cell culture, infections, immunoprecipitation, and immunoblotting. The intern will also participate in our laboratory meetings and journal clubs and will learn how to maintain an electronic laboratory notebook.

Academic Programs

Students enrolled in one of the following academic programs, or in a related field, are invited to apply:

- Microbiology, biochemistry, molecular biology or equivalent

Required Skills and Expertise

- Knowledge of tissue culture would be highly beneficial

Internship Details

Schedule

- ☒ Full-time (35 hrs/week)
- ☐ Part-time

Duration (approximative)

- ☒ 4 months
- ☐ 3 months
- ☐ 2 months
- ☐ 1 months

Funding

Funding will vary depending on the type of internship:

- Internship recognized by the academic institution: A minimum stipend of CAD **\$550 per week** (based on a 35-hour schedule) will be provided from the supervisor's research funds or in combination with other funding sources.
- Internship outside the academic curriculum: An hourly wage ranging from CAD **\$16.10 to \$18.72** will be provided from the supervisor's research funds.

Keywords

Virology, cell biology, herpes, pathogens

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<https://event.fourwaves.com/fr/stagerecherchechusj2026>