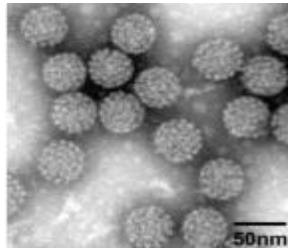
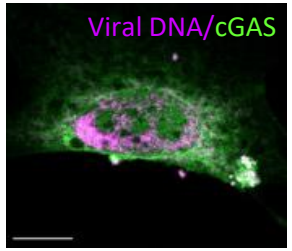
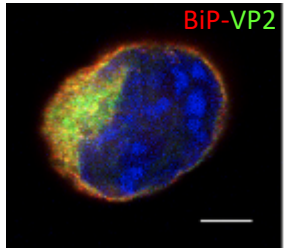
PhD position available –Laboratory of Virology-BIOCEV

13/10/2023

Project: exploring the molecular mechanisms of activation and regulation of the innate immune response to BK polyomavirus







In our lab we study at the molecular level i) interactions between viruses and host proteins that define the outcome of the infection and ii) the mechanism by which viruses are sensed by the host's innate immune system.

We use Mouse polyomavirus (MPyV) as model virus and the human pathogen BK polyomavirus (BKPyV).

The polyomaviruses cause in their hosts primary asymptomatic infections but under conditions of immunosuppression, enhanced viral replication leads to severe diseases.

Head of the lab and supervisor: Sandra Huerfano-Meneses

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The field of sensing of DNA from pathogens or mislocalized cellular DNA by the innate immune system has progressed enormously during the last years. Although detailed structures of some of the DNA sensors and adaptor proteins were deciphered, crucial questions remain unanswered, such as the interplay between viral genomes and DNA sensors.

Our recent studies revealed that in host cells MPyV and BK genomes are sensed in cytosol by cGAS-STING pathways. However, polyomaviruses, heavily regulated the IFN responses since moderate levels of IFN and cytokines are produced.

The proposed PhD project will directly follow the above research by studying the mechanisms of modulation of the cGAS-STING pathways during BKPyV infection. For this research the student may use among others techniques: mass spectrophotometry to understand possible PTM of cGAS and STING during BKPyV infection, co-immunoprecipitation, and confocal and super-resolution microscopy will follow possible interaction between viral proteins and DNA sensors or adaptors. During the development of the project, the viral mutants and KO and KD cells will be prepared to confirm hits or interactions.

Candidate profile: MSc degree in biochemistry or molecular/cellular biology, or related field, good English, strong interest in basic research and experimental work. Experience in molecular and immunological techniques such as ELISA, western blotting, PCR, and cell culture is an advantage.

What we offer: excellent working environment, well-equipped labs in BIOCEV with state-of-the-art technologies, access, and cooperation with the core imaging and proteomics facilities at Biocev, tuition by leading experts junior and senior virologist and molecular biologist, **Competitive salary of 0.5 FTE (contract as an employee) + the scholarship offered by the university**

Applications deadline in the faculty is 15.12.2023

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