

**Internship project Master 2
Year 2018-2019**

Laboratory/Institute: Inst. Biologie Structurale (IBS)

Team: Viral Replication Machines (VRM)

Director: Winfried WEISSENHORN

Head of the team: Marc JAMIN

Name and status of the scientist in charge: Thibaut CREPIN

HDR: yes no

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Program of the Master's degree in Biology:

- Neurosciences and Neurobiology Immunology, Microbiology, Infectious Diseases
 Integrative Structural Biology Physiology, Epigenetics, Differentiation, Cancer

Title of the project:

Specificities of Borna disease virus replication

Objectives (up to 3 lines):

The objectives of the project are to set up the expression of the different proteins (RNA polymerase (L), nucleoprotein (N) and phosphoprotein (P)) involved in Borna disease virus replication for their complete structure/function characterization.

Abstract (up to 10 lines):

Borna disease is as a fatal neurologic disease of horses and sheep. The etiologic agent, Borna disease virus (BDV), has been identified as an enveloped nonsegmented negative-strand RNA virus with unique properties of replication. Epidemiologic and cerebrospinal fluid investigations of psychiatric patients may also suggest a role of BDV in human psychiatric disorders.

With our expertise in handling viral proteins gained by working with the proteins of the replication machinery of Influenza viruses, we want to expand our skills to other viral systems that specifically replicate in the nucleus of the infected cell. The objectives of the current project are to develop biological tools for an integrative structure/function analysis of BDV replication and specific drug development.

Methods (up to 3 lines):

Molecular biology; protein & protein:RNA complexes biochemistry; protein expression in prokaryotic and eukaryotic systems; biophysics; structural biology (X-ray, NMR and EM)

Up to 3 relevant publications of the team:

1 - Labaronne A, Milles S, Donchet A, Jensen MR, Blackledge M, Bourhis, JM, Ruigrok RW and Crépin T (2017) Structural analysis of the complex between influenza B nucleoprotein and human importin- α . *Sci Rep*, 7:17164. doi: 10.1038/s41598-017-17458-z.

2 - Swale C, Monod A, Tengo L, Laboronne A, Garzoni F, Bourhis JM, Cusack S, Schoehn G, Berger I, Ruigrok RW and Crépin T (2016) Structural characterization of recombinant IAV polymerase reveals a stable complex between viral PA-PB1 heterodimer and host RanBP5. *Sci Rep*, 6:24727. doi: 10.1038/srep24727.

Requested domains of expertise (up to 5 keywords):

Molecular Biology, Biochemistry, Cellular Biology, Structural Biology