

# KAY GRÜNEWALD, PhD

Centre for Structural Systems Biology (*Germany*)

Head, Department of Structural Cell Biology of Viruses

University of Oxford

Professor, Structural Cell Biology

*Hosted by: Dr. Joaquin Ortega*



## Wednesday, April 10, 2019

### 11:30 am

Room 2/36

Strathcona Anatomy Building

3640 University Street

### ***“Integrative imaging of membrane modulations in the course of virus-host interactions.”***

A mechanistic understanding of the complexity of structural cell biology in virus-host interactions requires a combination of tools and approaches. We apply electron cryo tomography (cryoET) in combination with complementary techniques to provide a comprehensive spatio-temporal picture of the functional interaction between viral protein complexes and cellular structures in the course of the infection. Understanding the entirety of a virus' 'life cycle' requires an understanding of its transient structures at the molecular level in their native cellular environment. Viruses serve moreover as dedicated tools to mine the molecular detail of cellular tomograms and to highlight uncharted mechanisms. Members from the herpesviruses, a family of enveloped large DNA viruses, constitute our main model systems. We are particularly interested in steps involving membrane remodelling and report here on the processes of herpesvirus entry (overcoming the plasma membrane) and herpesvirus nuclear egress (i.e. overcoming the double membrane nuclear barrier). Along our biological questions, we constantly expand technologies and workflows and explore new combinations of approaches.

The presentation will highlight the integration of some of these, including correlative microscopies, super-resolution fluorescence cryo microscopy, X-ray microscopy/tomography and proteomics.