

Stanford



Stefan Oliver

Sr Res Scientist-Basic Ls, Pediatrics - Infectious Diseases

Bio

BIO

Stefan Oliver is a creative senior scientist and educator with a special interest in the membrane fusion mechanisms of viral pathogens. Stefan uses and develops multidisciplinary approaches to delineate the molecular functions that underpin the mechanics of herpesvirus fusion. Recently he has been focused on solving near atomic resolution structures of antibody-bound glycoproteins using contemporary cryo-EM technologies. One of his overarching goals is to understand the complex interplay of the herpesvirus fusion complex with cellular factors at the atomic level using state-of-the-art structural biology tools.

In addition to his dedication to lab-based science, Stefan is involved in community outreach supporting scientists of the future. He participates as a judge for science competitions and also lectures to high school students about STEM. He is a strong advocate for the scientific method and seeks to get the best out of his mentees at all stages of their careers, guiding high school students and postdocs through their research projects.

Stefan's educational background includes a B.Sc. in Immunology and a Ph.D. in Veterinary Virology. He has spent more than 25 years in academic and biotechnology research laboratories in fields spanning immunology, pharmaceuticals, infectious diseases and structural biology. Special interests outside of his primary field of research are evolution and motorcycles. Stefan was the recipient of an American Motorcycling Association (AMA) Service award for providing information related to COVID-19.

SERVICE, VOLUNTEER, AND COMMUNITY WORK

- Speaker for STEM Outreach Collective (2017)

Publications

PUBLICATIONS

- **A glycoprotein B-neutralizing antibody structure at 2.8Å uncovers a critical domain for herpesvirus fusion initiation.** *Nature communications*
Oliver, S. L., Xing, Y., Chen, D., Roh, S. H., Pintilie, G. D., Bushnell, D. A., Sommer, M. H., Yang, E., Carfi, A., Chiu, W., Arvin, A. M.
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- **Calcineurin phosphatase activity regulates Varicella-Zoster Virus induced cell-cell fusion.** *PLoS pathogens*
Zhou, M. n., Kamarshi, V. n., Arvin, A. M., Oliver, S. L.
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- **A site of varicella-zoster virus vulnerability identified by structural studies of neutralizing antibodies bound to the glycoprotein complex gHgL** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
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- **The cytoplasmic domain of varicella-zoster virus glycoprotein h regulates syncytia formation and skin pathogenesis.** *PLoS pathogens*
Yang, E., Arvin, A. M., Oliver, S. L.
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- **An immunoreceptor tyrosine-based inhibition motif in varicella-zoster virus glycoprotein B regulates cell fusion and skin pathogenesis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Oliver, S. L., Brady, J. J., Sommer, M. H., Reichelt, M., Sung, P., Blau, H. M., Arvin, A. M.
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- **The Structures and Functions of VZV Glycoproteins.** *Current topics in microbiology and immunology*
Oliver, S. L.
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- **Target highlights in CASP14: analysis of models by structure providers.** *Proteins*
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- **The N-terminus of varicella-zoster virus glycoprotein B has a functional role in fusion.** *PLoS pathogens*
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- **Varicella-zoster virus: molecular controls of cell fusion-dependent pathogenesis.** *Biochemical Society transactions*
Oliver, S. L., Zhou, M., Arvin, A. M.
2020
- **HIV-1 inhibitory properties of eCD4-IgMim2 determined using an Env-mediated membrane fusion assay.** *PloS one*
Yang, E., Gardner, M. R., Zhou, A. S., Farzan, M., Arvin, A. M., Oliver, S. L.
2018; 13 (10): e0206365
- **The Glycoprotein B Cytoplasmic Domain Lysine Cluster Is Critical for Varicella-Zoster Virus Cell-Cell Fusion Regulation and Infection** *JOURNAL OF VIROLOGY*
Yang, E., Arvin, A. M., Oliver, S. L.
2017; 91 (1)
- **Dysregulated Glycoprotein B-Mediated Cell-Cell Fusion Disrupts Varicella-Zoster Virus and Host Gene Transcription during Infection** *JOURNAL OF VIROLOGY*
Oliver, S. L., Yang, E., Arvin, A. M.
2017; 91 (1)
- **Varicella-Zoster Virus Glycoproteins: Entry, Replication, and Pathogenesis.** *Current clinical microbiology reports*
Oliver, S. L., Yang, E., Arvin, A. M.
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- **Role for the α V Integrin Subunit in Varicella-Zoster Virus-Mediated Fusion and Infection.** *Journal of virology*
Yang, E., Arvin, A. M., Oliver, S. L.
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- **The cytoplasmic domain of varicella-zoster virus glycoprotein H regulates syncytia formation and skin pathogenesis.** *PLoS pathogens*
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- **Molecular mechanisms of varicella zoster virus pathogenesis** *NATURE REVIEWS MICROBIOLOGY*
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Che, X., Oliver, S. L., Reichelt, M., Sommer, M. H., Haas, J., Rovis, T. L., Arvin, A. M.
2013; 87 (9): 5106-5117

- **Structure-function analysis of varicella-zoster virus glycoprotein H identifies domain-specific roles for fusion and skin tropism** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Vleck, S. E., Oliver, S. L., Brady, J. J., Blau, H. M., Rajamani, J., Sommer, M. H., Arvin, A. M.
2011; 108 (45): 18412-18417
- **Disruption of PML Nuclear Bodies Is Mediated by ORF61 SUMO-Interacting Motifs and Required for Varicella-Zoster Virus Pathogenesis in Skin** *PLOS PATHOGENS*
Wang, L., Oliver, S. L., Sommer, M., Rajamani, J., Reichelt, M., Arvin, A. M.
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- **Mutagenesis of Varicella-Zoster Virus Glycoprotein I (gI) Identifies a Cysteine Residue Critical for gE/gI Heterodimer Formation, gI Structure, and Virulence in Skin Cells** *JOURNAL OF VIROLOGY*
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- **Identification and functional characterization of the Varicella zoster virus ORF11 gene product** *VIROLOGY*
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- **Anti-Glycoprotein H Antibody Impairs the Pathogenicity of Varicella-Zoster Virus in Skin Xenografts in the SCID Mouse Model** *JOURNAL OF VIROLOGY*
Vleck, S. E., Oliver, S. L., Reichelt, M., Rajamani, J., Zerboni, L., Jones, C., Zehnder, J., Grose, C., Arvin, A. M.
2010; 84 (1): 141-152
- **Varicella-Zoster Virus T Cell Tropism and the Pathogenesis of Skin Infection** *VARICELLA-ZOSTER VIRUS*
Arvin, A. M., Moffat, J. F., Sommer, M., Oliver, S., Che, X., Vleck, S., Zerboni, L., Ku, C.
2010; 342: 189-209
- **Analysis of the Functions of Glycoproteins E and I and Their Promoters During VZV Replication In Vitro and in Skin and T-Cell Xenografts in the SCID Mouse Model of VZV Pathogenesis** *VARICELLA-ZOSTER VIRUS*
Arvin, A. M., Oliver, S., Reichelt, M., Moffat, J. F., Sommer, M., Zerboni, L., Berarducci, B.
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- **Mutagenesis of Varicella-Zoster Virus Glycoprotein B: Putative Fusion Loop Residues Are Essential for Viral Replication, and the Furin Cleavage Motif Contributes to Pathogenesis in Skin Tissue In Vivo** *JOURNAL OF VIROLOGY*
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- **Genomic characterization of the unclassified bovine enteric virus Newbury agent-1 (Newbury1) endorses a new genus in the family Caliciviridae** *VIROLOGY*
Oliver, S. L., Asobayire, E., Dastjerdi, A. M., Bridger, J. C.
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- **Genotype 1 and genotype 2 bovine noroviruses are antigenically distinct but share a cross-reactive epitope with human noroviruses** *JOURNAL OF CLINICAL MICROBIOLOGY*
Oliver, S. L., Batten, C. A., Deng, Y., Elschner, M., Otto, P., Charpilienne, A., Clarke, I. N., Bridger, J. C., Lambden, P. R.
2006; 44 (3): 992-998
- **A chimeric bovine enteric calicivirus: evidence for genomic recombination in genogroup III of the Norovirus genus of the Caliciviridae** *VIROLOGY*
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- **Molecular characterization of bovine enteric caliciviruses: a distinct third genogroup of noroviruses (Norwalk-like viruses) unlikely to be of risk to humans** *JOURNAL OF VIROLOGY*
Oliver, S. L., Dastjerdi, A. M., Wong, S., El-Attar, L., Gallimore, C., Brown, D. W., Green, J., Bridger, J. C.
2003; 77 (4): 2789-2798