UC DAVIS HEALTH | SCHOOL OF MEDICINE

Medical Microbiology & Immunology
MMI 291 Seminar Series
Emerging Challenges in Microbiology and Immunology

MMI 291 Seminar Series

Current Theme: Interdisciplinary Research
Winter Quarter 2021 – CRN 33311

Friday Seminar – 12:10-1 p.m.

"Host species-specific inhibition of the antiviral protein kinase R by poxviral pseudosubstrate inhibitors."

Rothenburg Lab / Research

Poxviruses show extreme differences in their host range, with some infecting only a single host species, whereas others can infect many different species. My thesis work used two genera: orthopoxviruses (OPVs) capable of productively infecting diverse host species and capripoxviruses (CaPVs) that infect mainly ungulates. Specifically, the research focused on the interactions between a host antiviral factor, protein kinase R (PKR), and poxviral PKR inhibitor, K3L. I investigated the role of K3L in PKR species-specificity and its relationship to host range. I found that K3 orthologs from two different genera showed species specific PKR inhibitions and its inhibition profiles by K3 orthologs from even closely related species showed unpredictable PKR inhibition. The results showed that host evolutionary distance cannot be a parameter in classifying the PKR sensitivity to poxviral inhibitors. Also, Mutagenesis studies of K3 and PKR from selected species demonstrate the distinctive molecular interactions in both viral and host genes contributing to differential virus-host interactions.

Publications

Park C, Peng C, Brennan G, Rothenburg S. *Species-specific inhibition of antiviral protein kinase R by capripoxviruses and vaccinia virus*. Ann N Y Acad Sci. 2019 Feb;1438(1):18-29. doi: 10.1111/nyas.14000. Epub 2019 Jan 15. PMID: 30644558.

Park C, Peng C, Rahman MJ, Haller SL, Tazi L, Brennan G, Rothenburg S. *Orthopoxvirus K3 orthologs show virus- and host-specific inhibition of the antiviral protein kinase PKR*. PLoS Pathog. 2021 Jan 14;17(1):e1009183. doi: 10.1371/journal.ppat.1009183. PMID: 33444388; PMCID: PMC7840043.

March
12

Chorong Park, PhD Candidate
Rothenburg Lab
Medical Microbiology and Immunology
School of Medicine
UC Davis

March 12, 2021
12:10 – 1 p.m.
ZOOM Meeting

Medical Microbiology & Immunology
School of Medicine

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We hope to see you there!