

MMI 291 Seminar Series

Current Theme: Interdisciplinary Research
Winter Quarter 2019 – CRN 43601



Friday Seminar – 12:10-1 PM

“Interfering with interferons: immunology lessons learned from poxviruses”

The primary interest of Dr. Xiang's laboratory is host-pathogen interactions, with poxviruses as the model systems. Poxviruses include some dangerous emerging or re-emerging pathogens as well as some promising vaccine vectors for infectious diseases and cancers. Particularly, Xiang lab has studied extensively viral host-range determinants and their specific antagonism of host restriction factors. The interferon (IFN) system is the first line of host defense against intracellular pathogens, particularly viruses. IFNs induce the expression of hundreds of interferon-stimulated genes (ISGs), some of which are antiviral factors that restrict viral replication. To successfully replicate in the cells, viruses have to overcome the formidable barriers posed by the IFN system, particularly the restriction factors. Research from Xiang lab recently showed that a paralogous pair of ISGs, SAMD9 and SAMD9L, form a critical host barrier against poxvirus infection. Poxviruses, in turn, employ two structurally distinct classes of inhibitors to antagonize SAMD9 and SAMD9L. The outcome of this genetic conflict between poxviruses and their hosts is a major determinant for poxvirus host range. SAMD9 and SAMD9L are tumor suppressors, and their mutations are associated with cancers or developmental disorders.

Publication references

A paralogous pair of mammalian host restriction factors form a critical host barrier against poxvirus infection. Meng X, Zhang F, Yan B, Si C, Honda H, Nagamachi A, Sun LZ, Xiang Y. PLoS Pathog. 2018 Feb 15;14(2):e1006884. doi: 10.1371/journal.ppat.1006884. eCollection 2018 Feb.

Structure of a lipid-bound viral membrane assembly protein reveals a modality for enclosing the lipid bilayer. Pathak PK, Peng S, Meng X, Han Y, Zhang B, Zhang F, Xiang Y, Deng J. Proc Natl Acad Sci U S A. 2018 Jul 3;115(27):7028-7032. doi: 10.1073/pnas.1805855115. Epub 2018 Jun 18.

Structural basis for antagonizing a host restriction factor by C7 family of poxvirus host-range proteins. Meng X, Krumm B, Li Y, Deng J, Xiang Y. Proc Natl Acad Sci U S A. 2015 Dec 1;112(48):14858-63. doi: 10.1073/pnas.1515354112. Epub 2015 Nov 17.



March 8



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March 8, 2019
12:10 – 1 PM
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