

## Complex role of macrophages in *Xenopus* immune defenses and persistence of the ranavirus FV<sub>3</sub>

Jacques Robert, Ph.D.

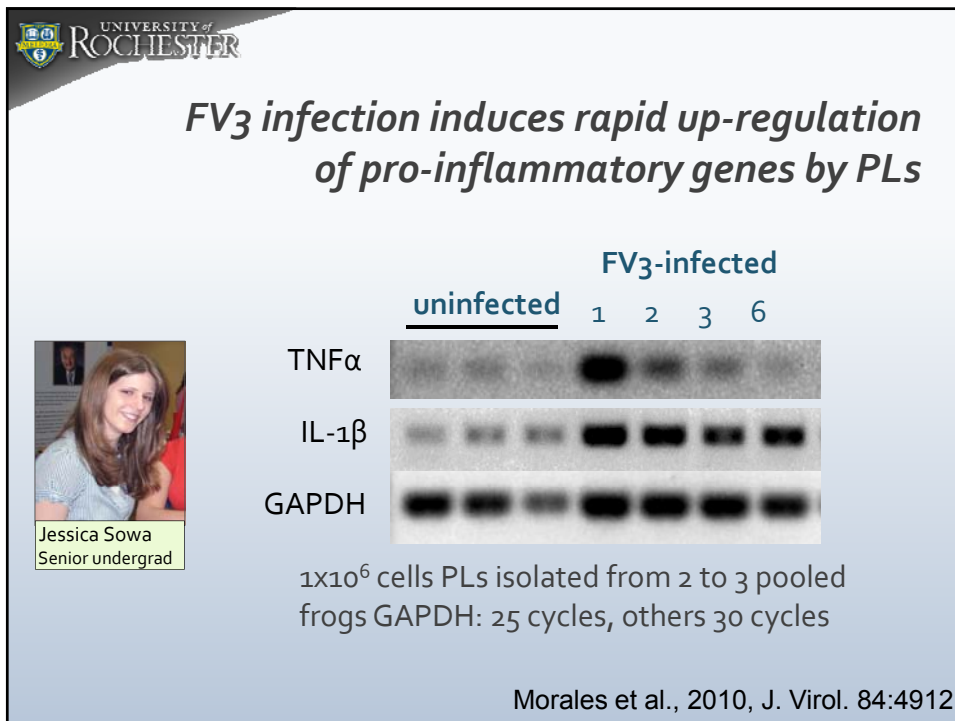
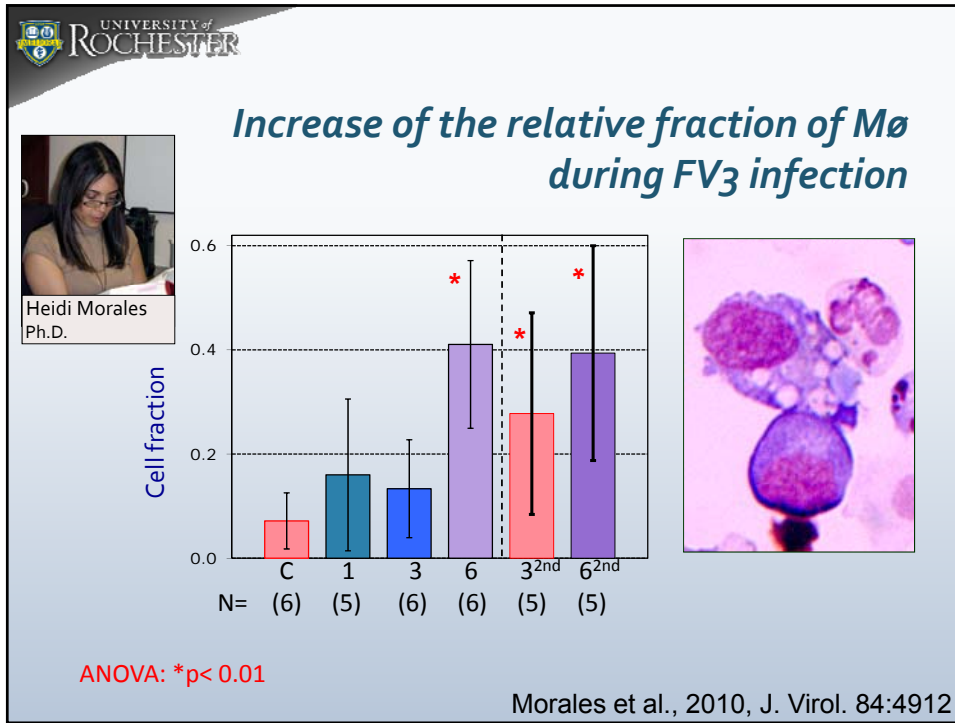
Microbiology & Immunology, University of Rochester Medical Center, Rochester, NY

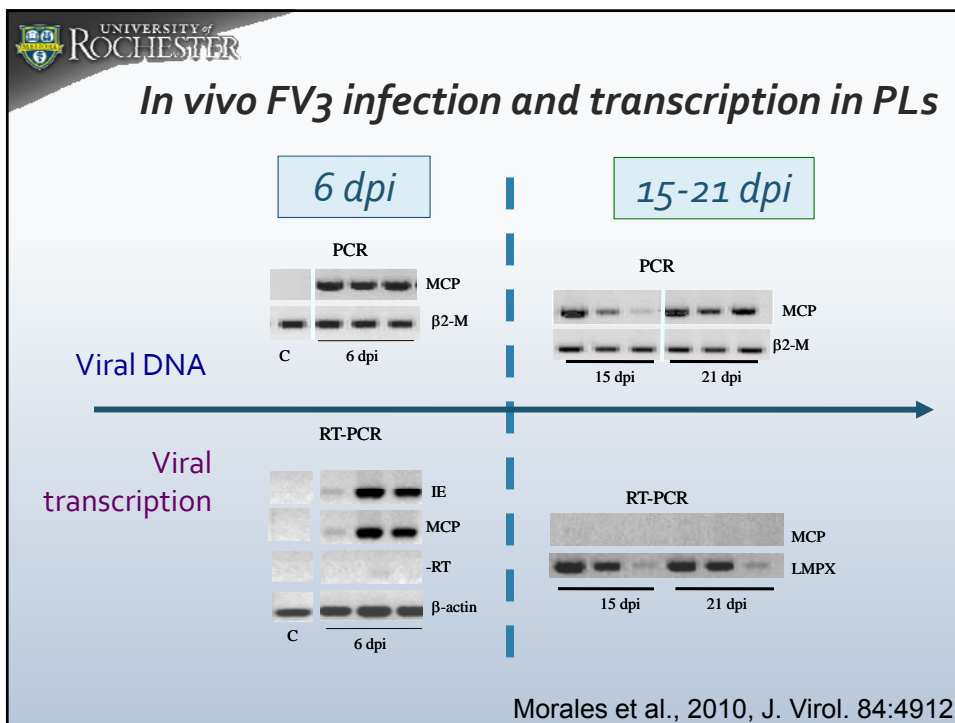
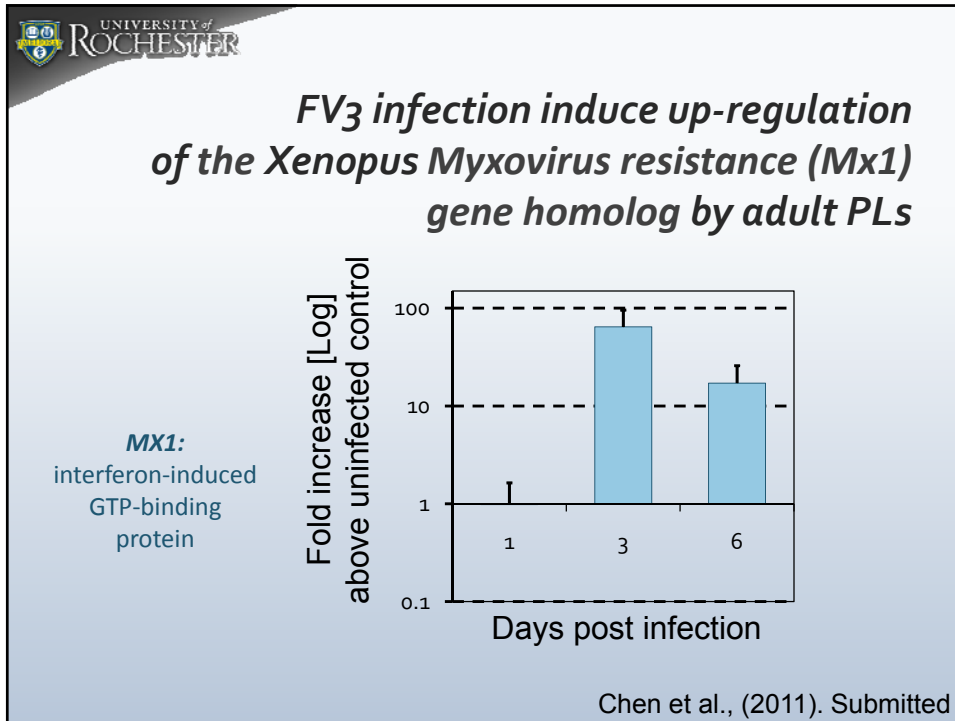


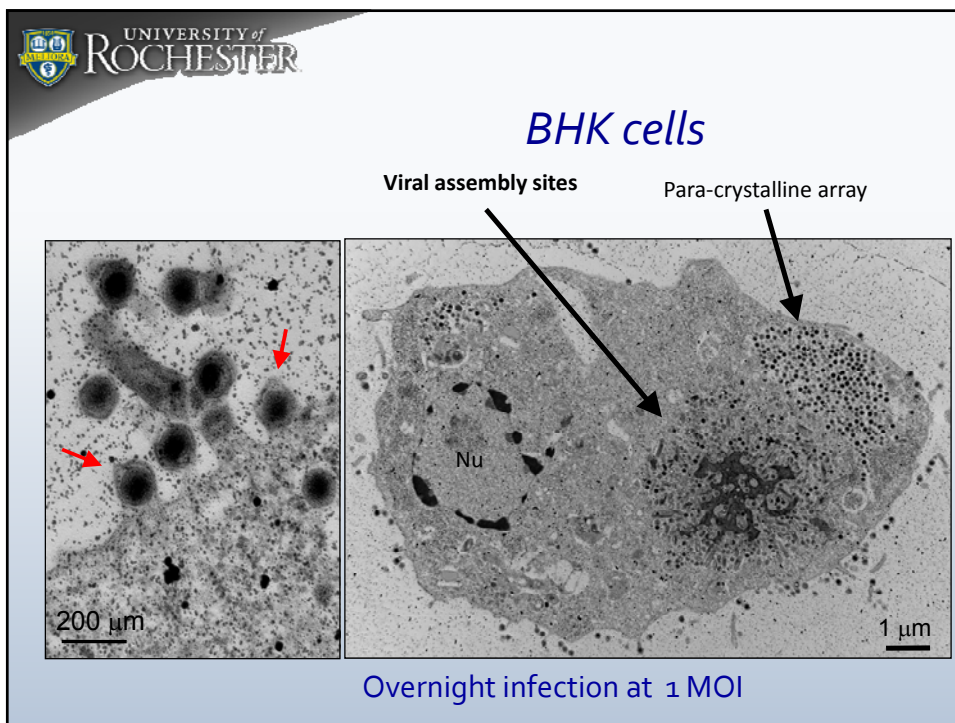
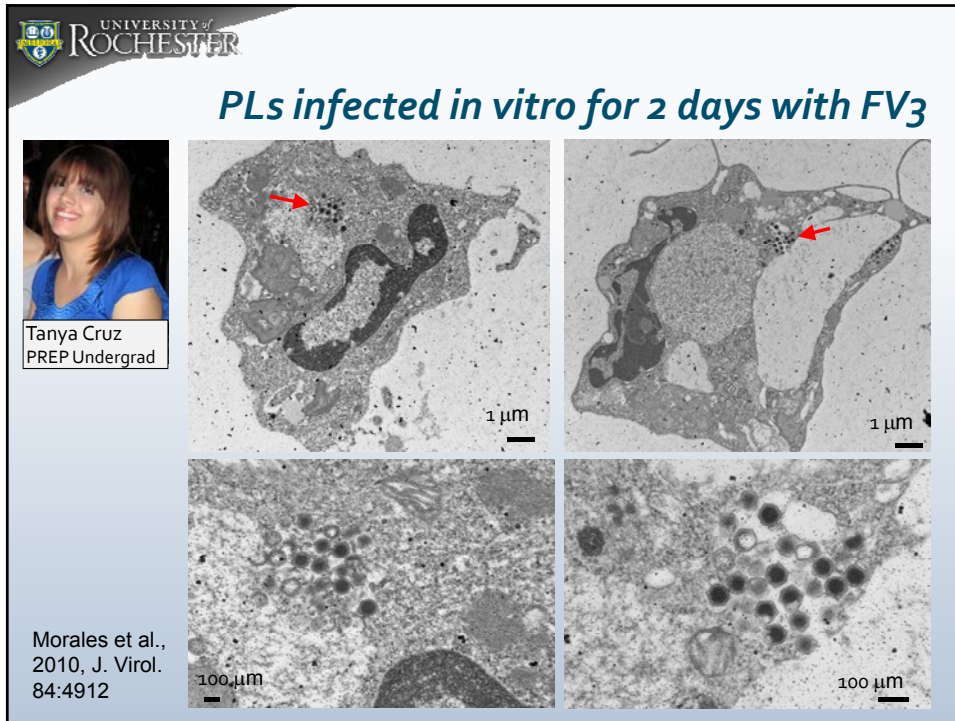
### Macrophages

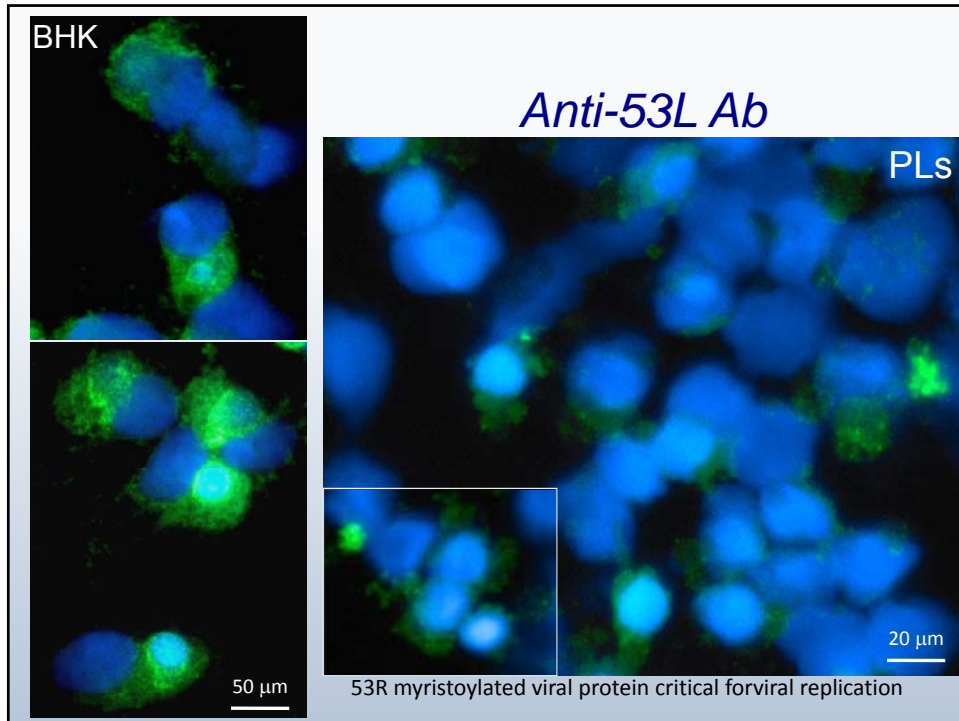
**Key cells involved in both adaptive and innate immunity**

- **Innate immunity:** Phagocyte pathogens, secrete pro-inflammatory cytokines (IL-1, IL-6, IL-8, TNF $\alpha$ ) that help recruit other immune cells. Also secrete NO, anti-microbial peptides, etc.
- **Adaptive immunity:** act as antigen presenting cells (APCs), presenting Ags through MHC class I and II, and activating CD8<sup>+</sup> and CD4<sup>+</sup> T cells
- **Vector of infection:** Sometimes used by viruses for dissemination in the organism as well as to remain in a quiescent state









UNIVERSITY of ROCHESTER

*Colocalization of FV3 53R Ag with the macrophage HAM65 marker*

Erica George, Undergrad 2010

M $\emptyset$  (HAM56)

FV3 (53R)

Overlay (+Hoechst)

20  $\mu$ m

M

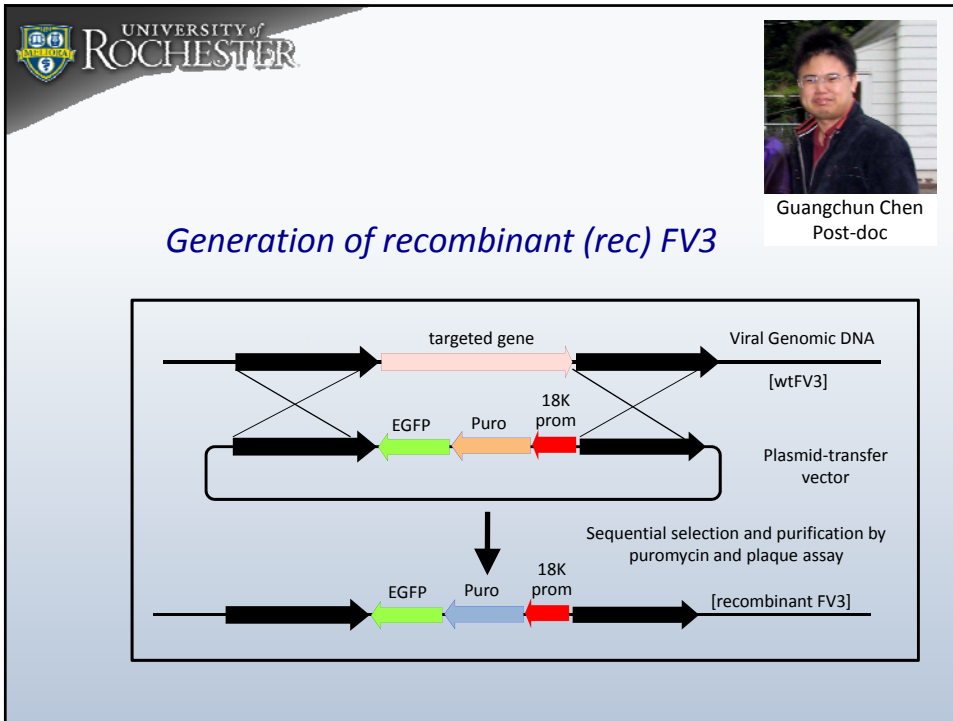
I

M

IM

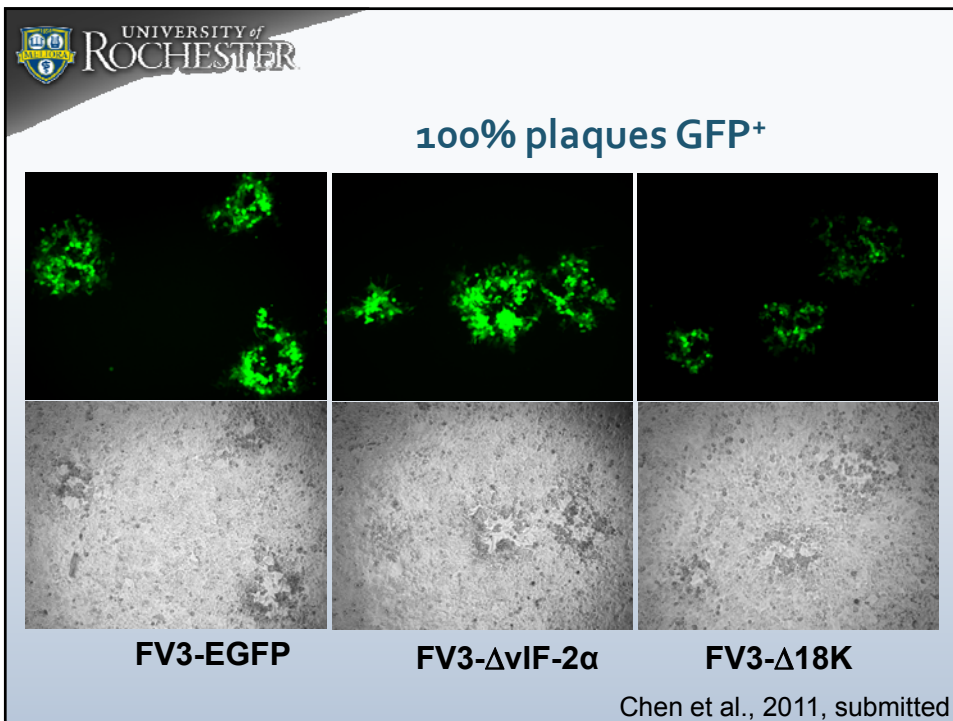
*2 days FV3 in vitro infection*

Robert et al., (2011). Virology, in press



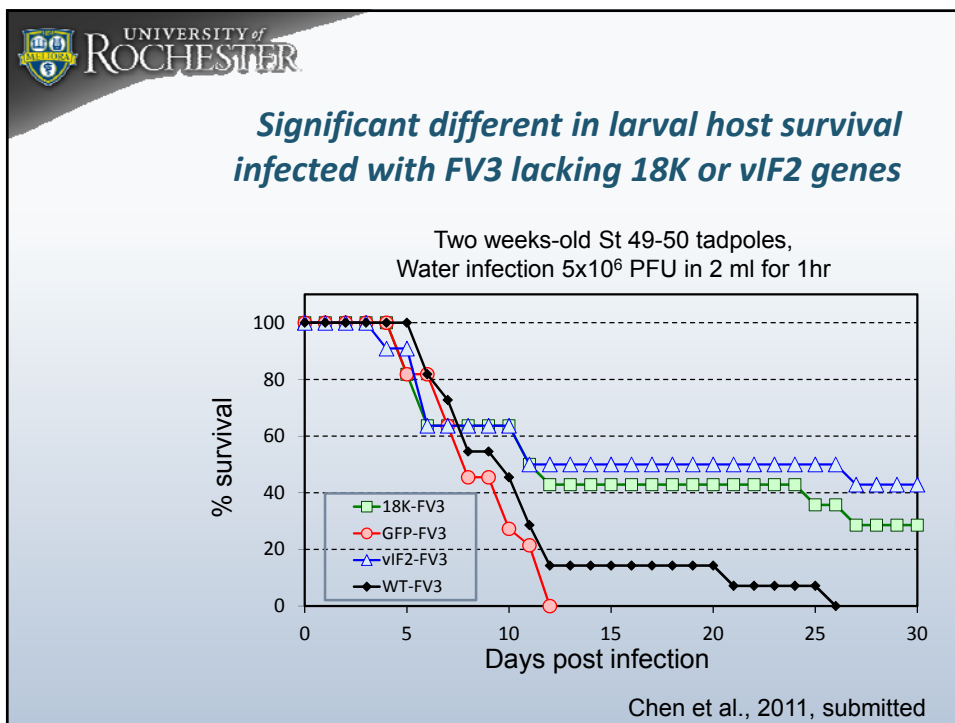
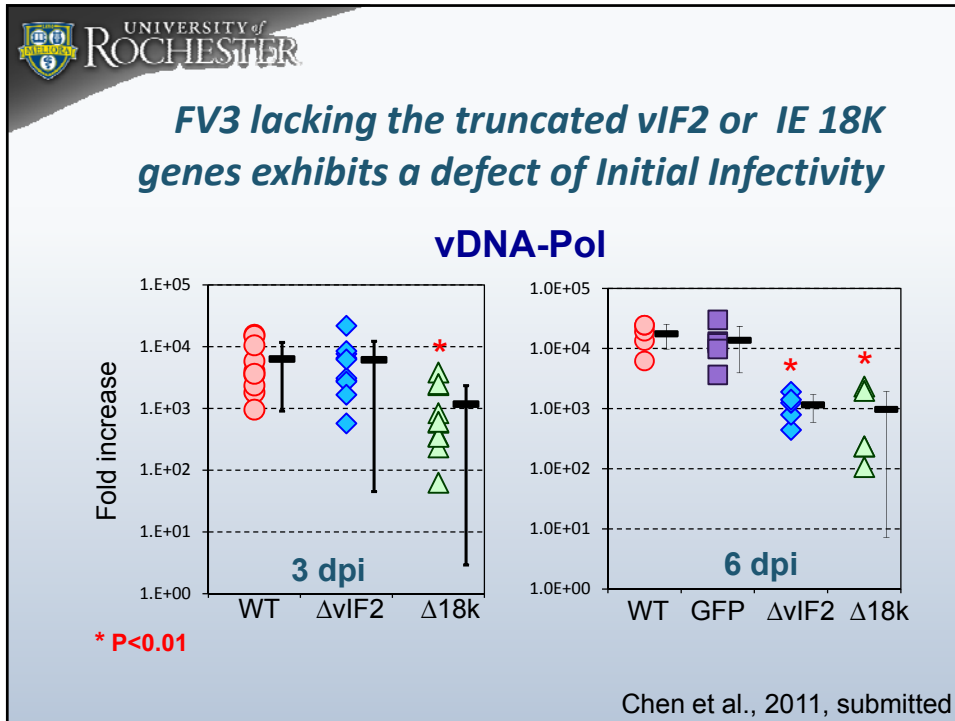
Guangchun Chen  
Post-doc

*Generation of recombinant (rec) FV3*



Chen et al., 2011, submitted







## Summary

- ❑ Increase of total PLs and increase of relative fraction of macrophages in peritoneal cavity from 1 to 6 dpi
- ❑ PLs rapidly (1 dpi) up-regulate the pro-inflammatory genes IL-1 $\beta$  TNF $\alpha$  and IFN $\gamma$ , as well as the type I-IFN-inducible gene Mx1
- ❑ PLs include APCs that can promote proliferation of FV3-primed T cells
- ❑ FV3 DNA remains detectable in PLs up to 20 dpi, but apparently inactive (no transcription, no infectious virions)
- ❑ This suggests that although PLs are actively involved in anti-FV3 immune responses, some of these cells can be permissive and harbor quiescent, asymptomatic FV3

## THE JUMPING FROG LAB

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NIH: T32-AI 07285 (H.N.),  
 R24-AI-059830, R03 HD061671  
 NSF: IOS-0923772, 0742711



<http://www.urmc.rochester.edu/smd/mbi/xenopus/>