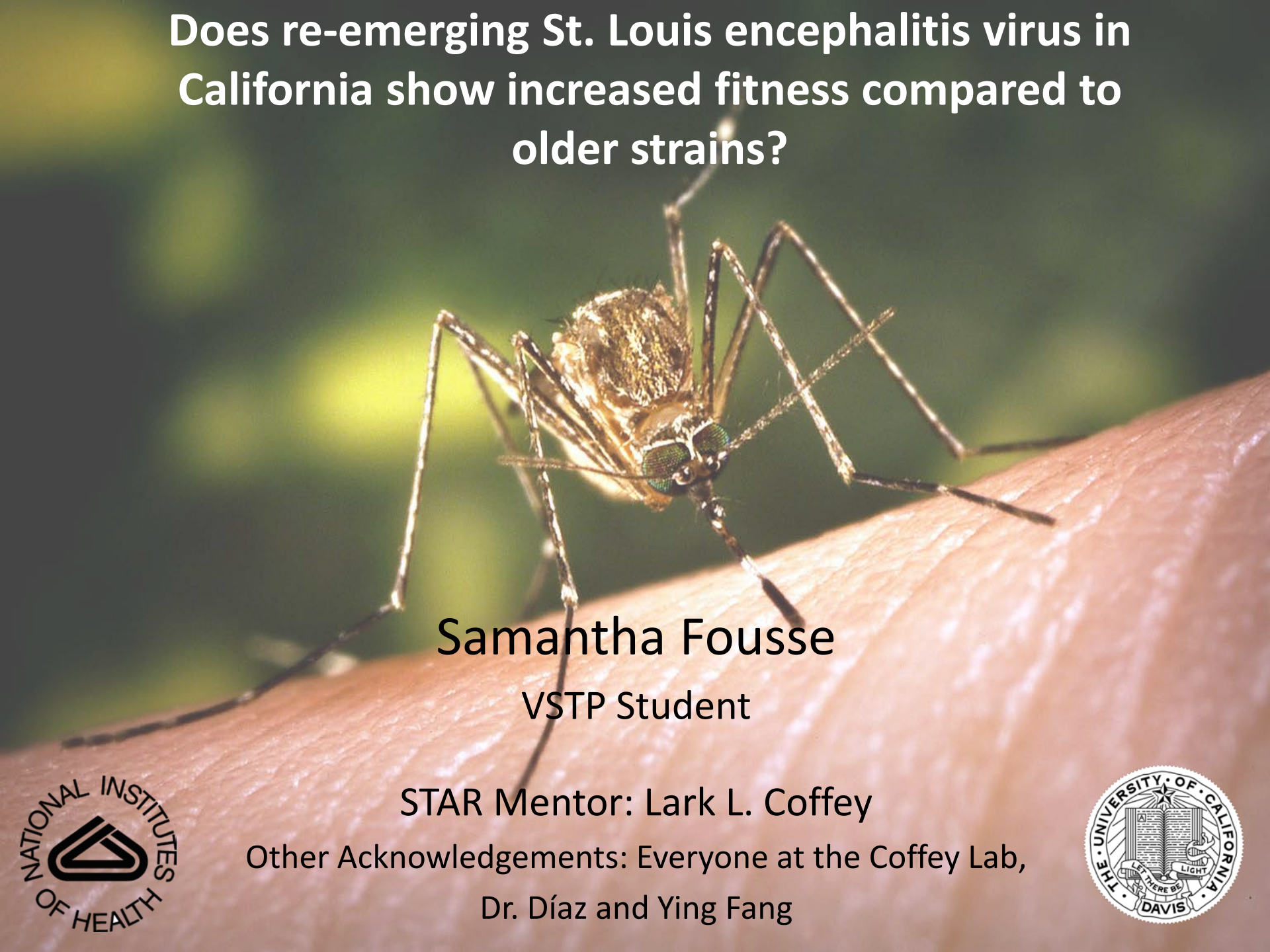
Does re-emerging St. Louis encephalitis virus in California show increased fitness compared to older strains?



Samantha Fousse

VSTP Student

STAR Mentor: Lark L. Coffey

Other Acknowledgements: Everyone at the Coffey Lab, Dr. Díaz and Ying Fang

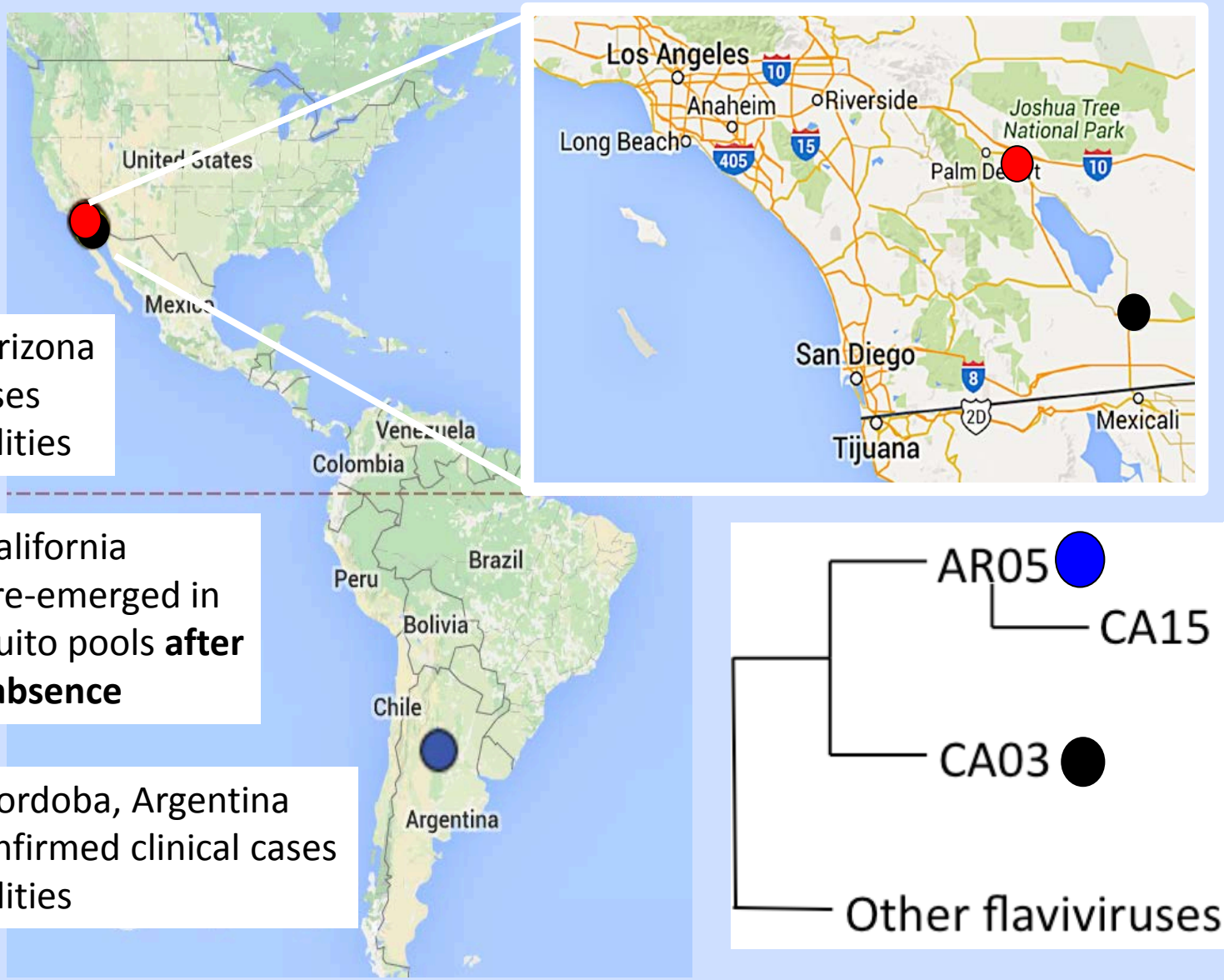
St. Louis encephalitis virus (SLEV)

Symptoms
- Asymptomatic >99%
- Flu-like symptoms
- Neurologic manifestations
  - Death (5-15%)

Bites and infects

Transmission Cycle

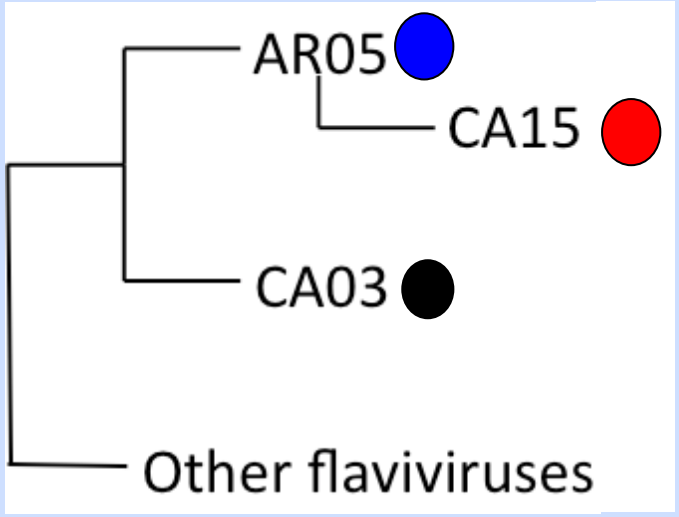
SLEV is re-emerging in California



2015 – Arizona
- 19 cases
- 2 fatalities

2015 – California
- SLEV re-emerged in mosquito pools **after 12yr absence**

2005 – Cordoba, Argentina
- 47 confirmed clinical cases
- 9 fatalities

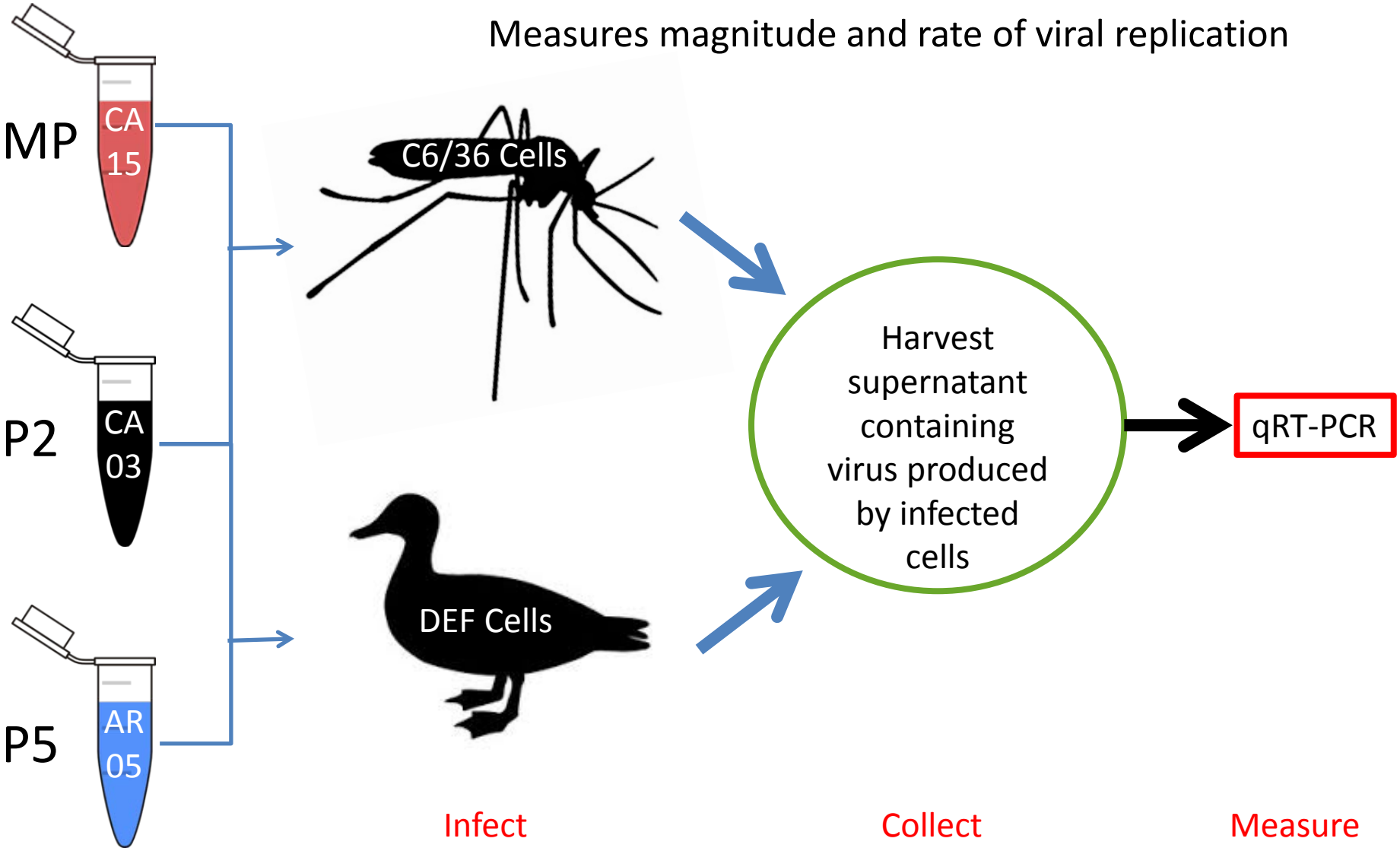


Hypothesis:

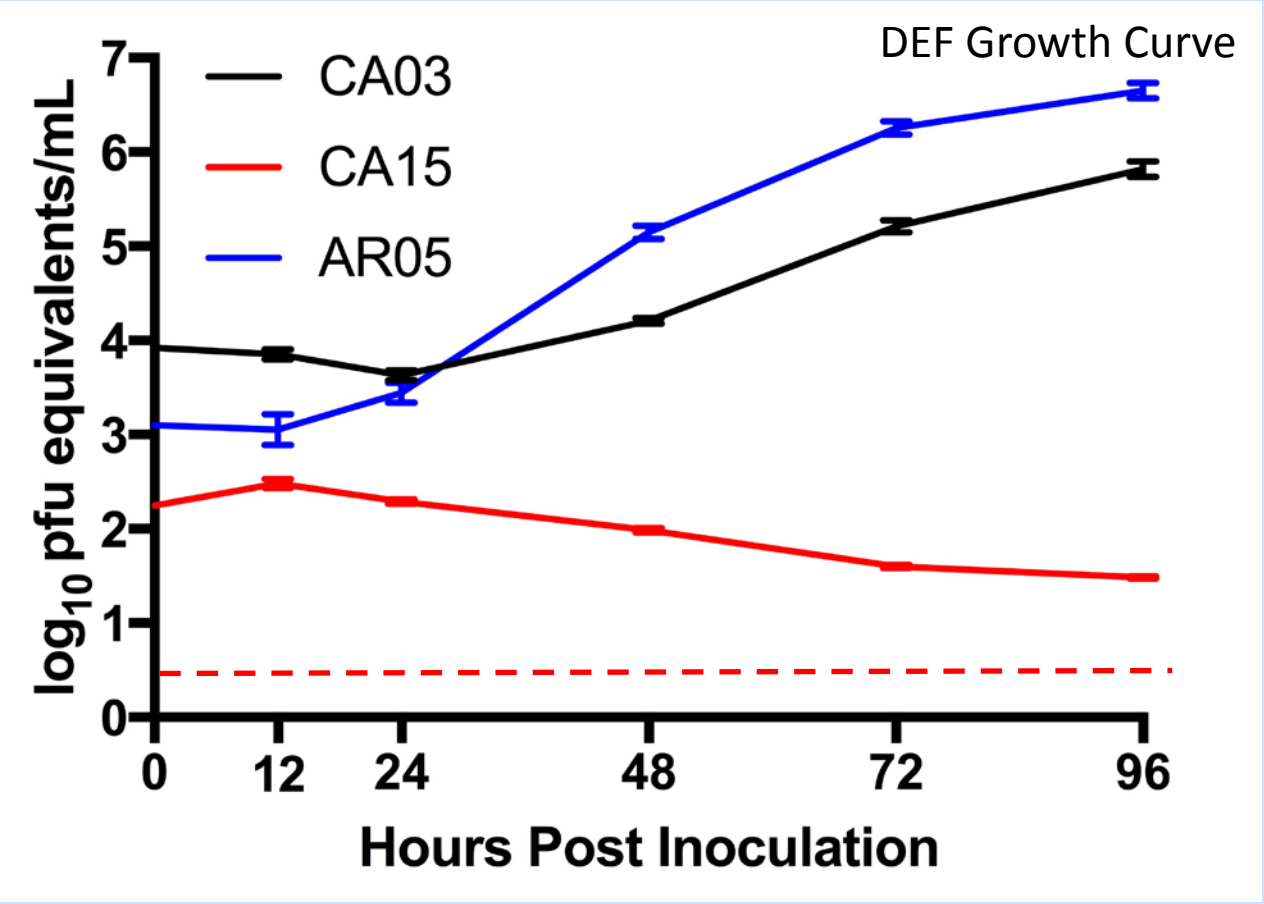
Re-emerging St. Louis encephalitis virus have **faster growth kinetics** and **achieve higher titers** than historical and ancestral strains, which may have promoted re-emergence.

Methods: One-Step Growth Curve

Measures magnitude and rate of viral replication



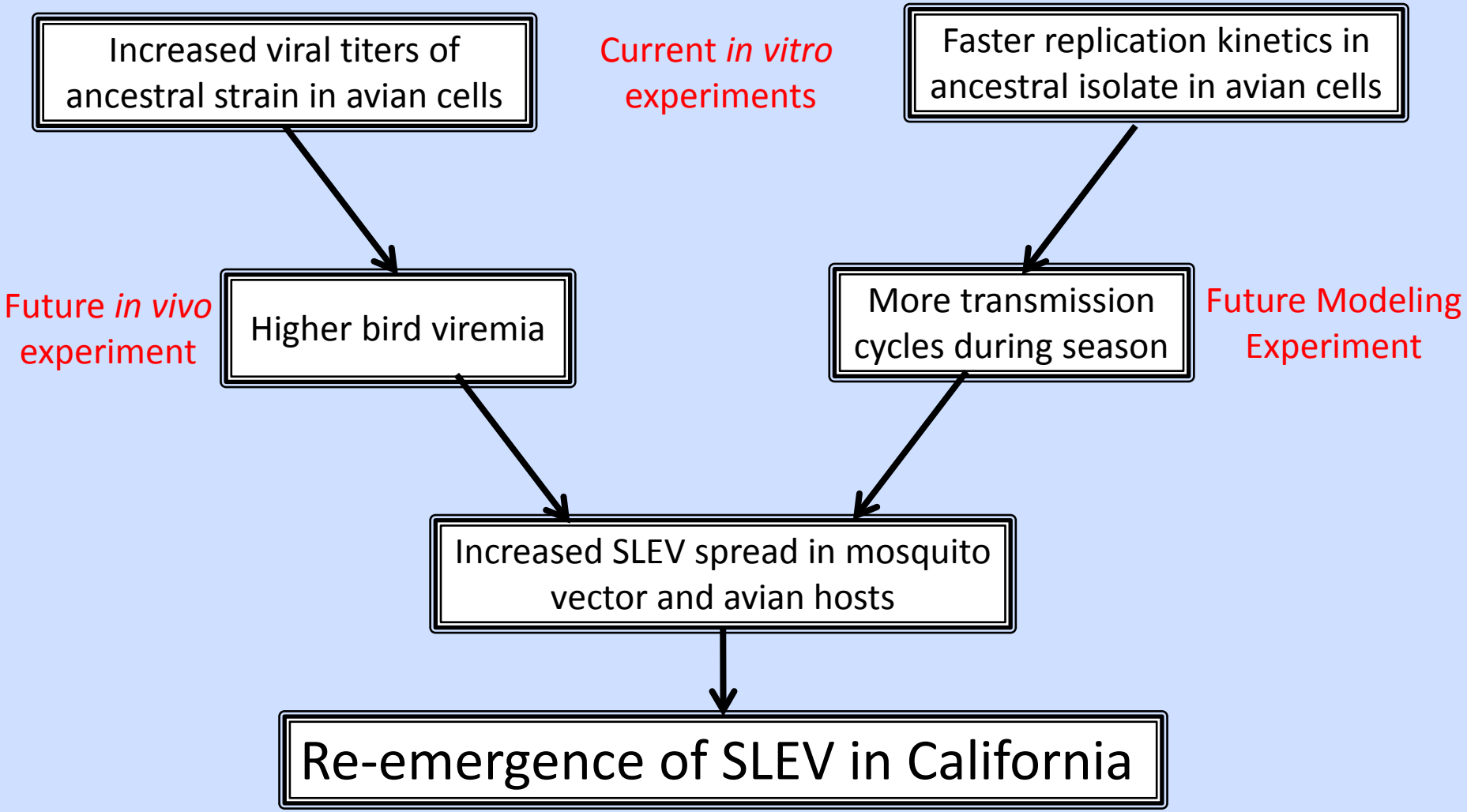
Results: Ancestral SLEV replicates faster and achieves higher viral levels than historical SLEV California in DEF cells.



Results: In-progress

- Growth curve with matched MOI
- Growth curve with extended time points
- Repeated DEF growth curve without using fungicide in mosquito pool sample
- Mosquito cell growth curve to determine replication kinetics in alternate host

Discussion and Next Steps



Questions?

Samantha Fousse
slfousse@ucdavis.edu

What I have learned this summer

Cell Culture

Virus Isolation

Mosquito trivia

Viral Growth Curves

Plaque Assay

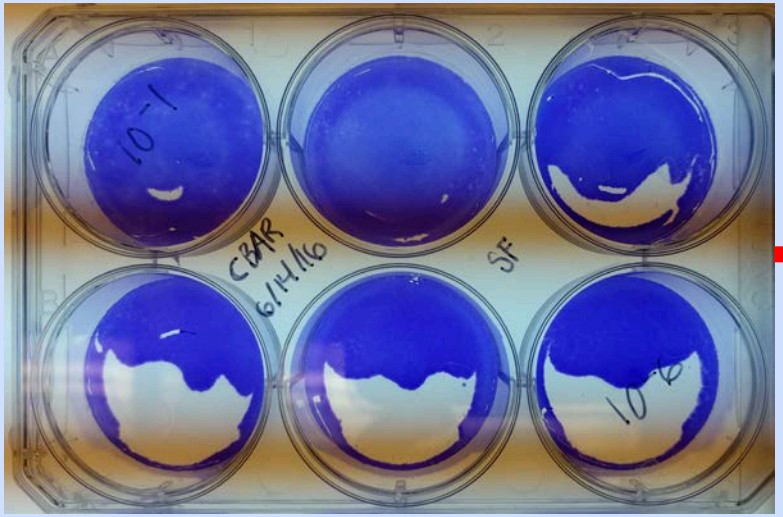
BSL-3

qrt-PCR

International collaboration

What I have learned this summer…

Protocol details make a big difference in terms of the experiment!



ROCK PLATES