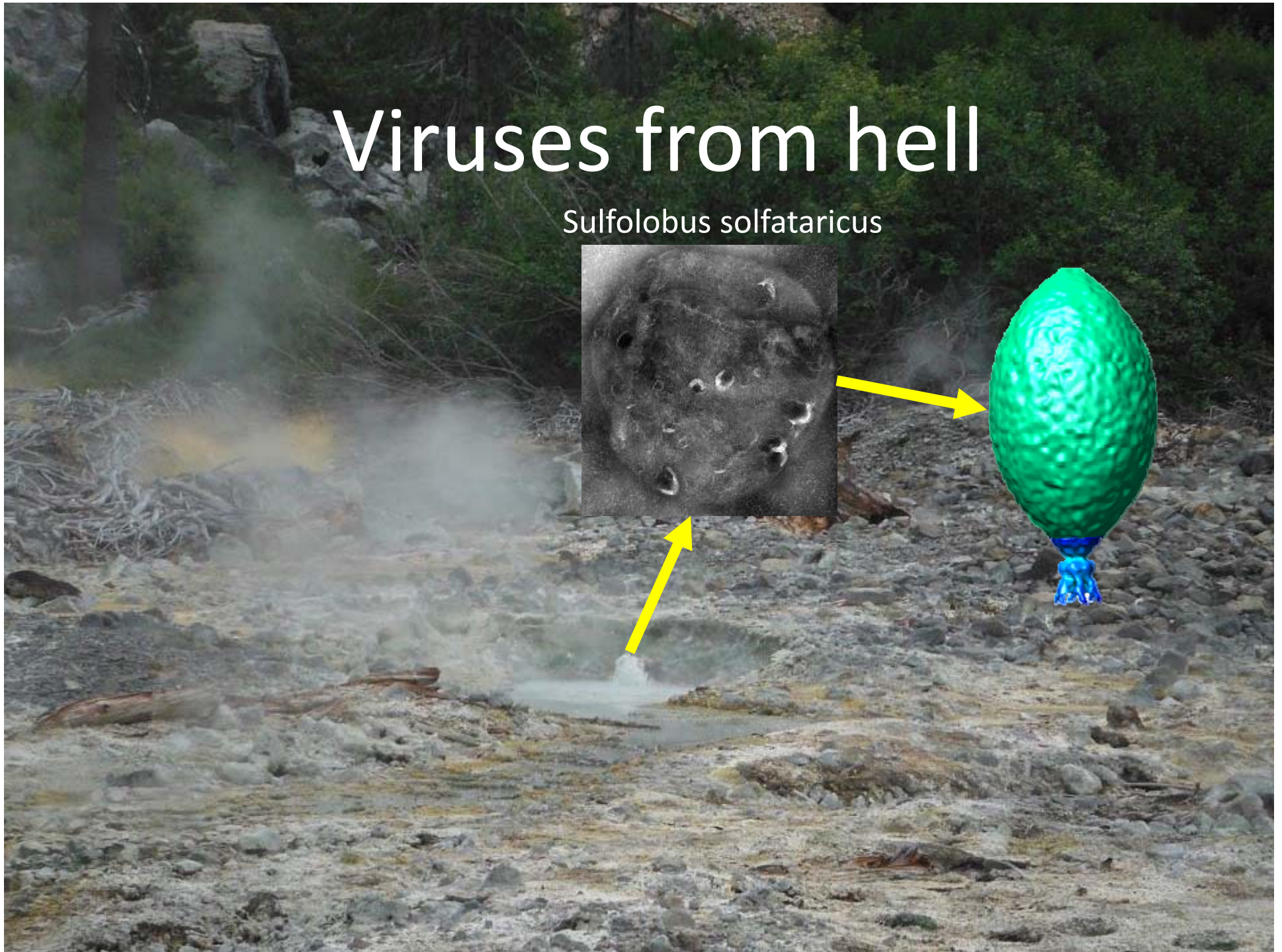
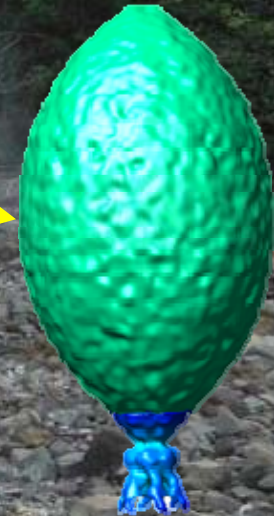


# Techniques and Analysis of Transmission Electron Microscopy in Extremophile Viruses

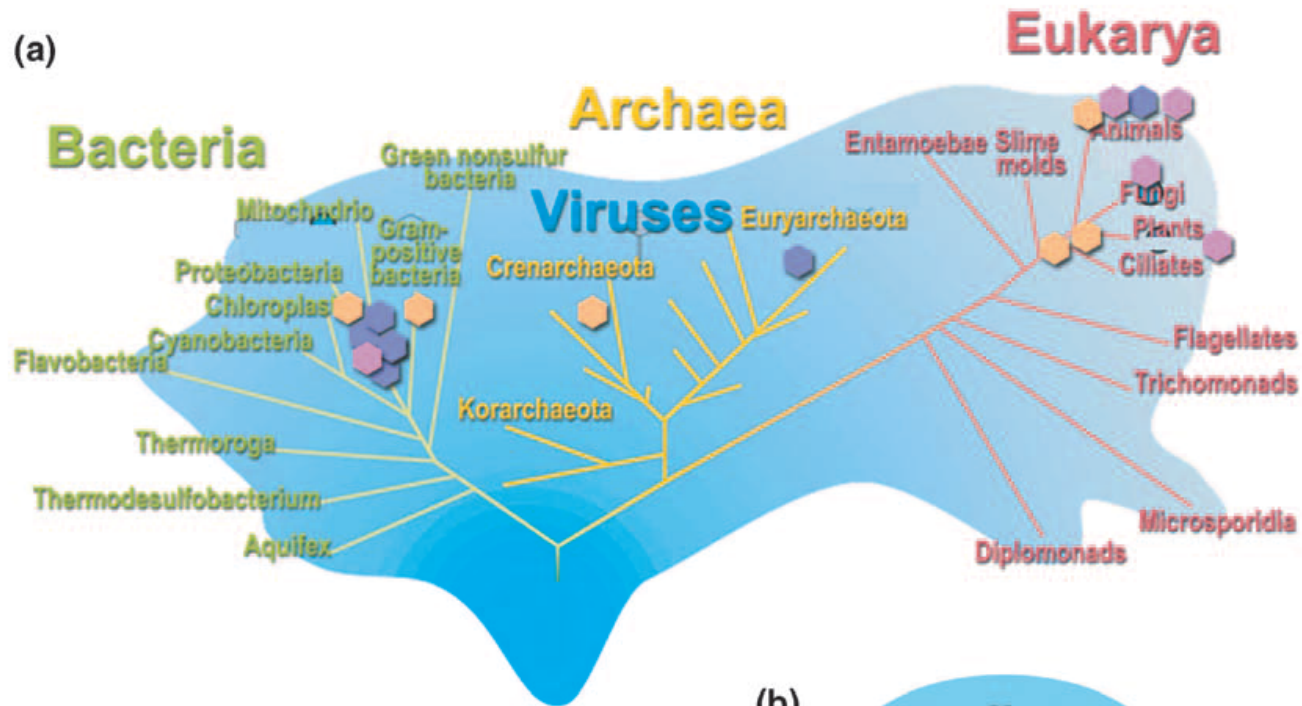
Madeline Gorchels  
Wellesley College

# Viruses from hell

*Sulfolobus solfataricus*

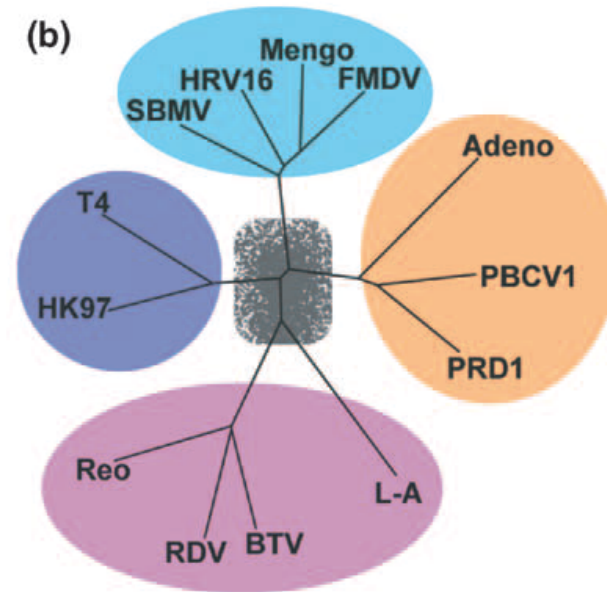


(a)



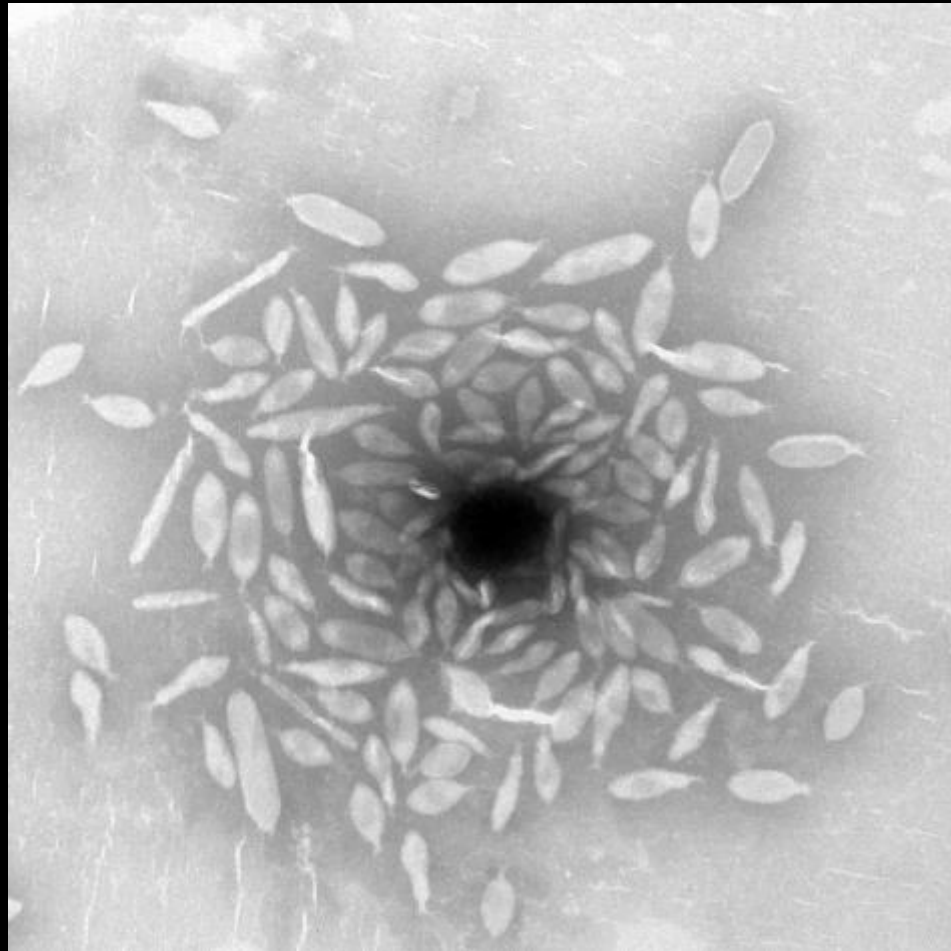
Lineage	Representatives
PRD1-like	PRD1, Bam35, STIV, adeno, PBCV1, PpV01
HK97-like	HK97, T4, P22, $\phi$ 29, P.f. VLP, HSV-1
BTV-like	$\phi$ 6, BTV, RDV, Reo, L-A

(b)

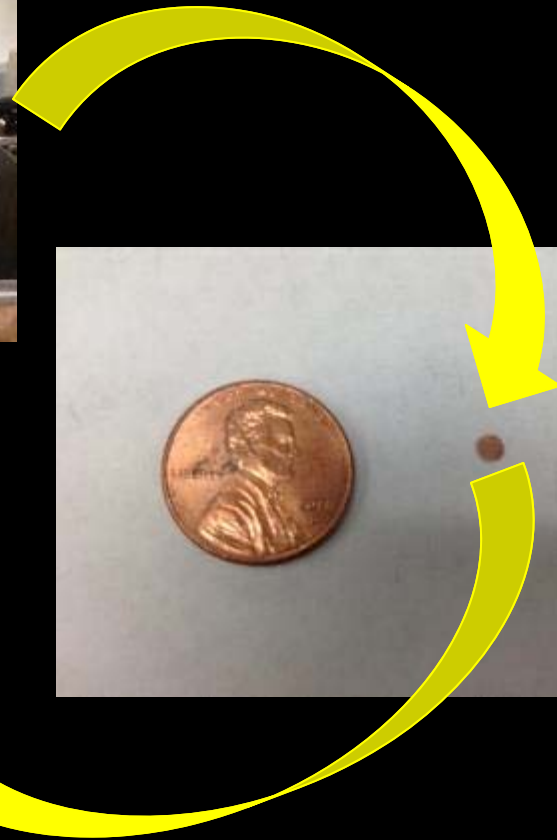


Bamford et al. 2005

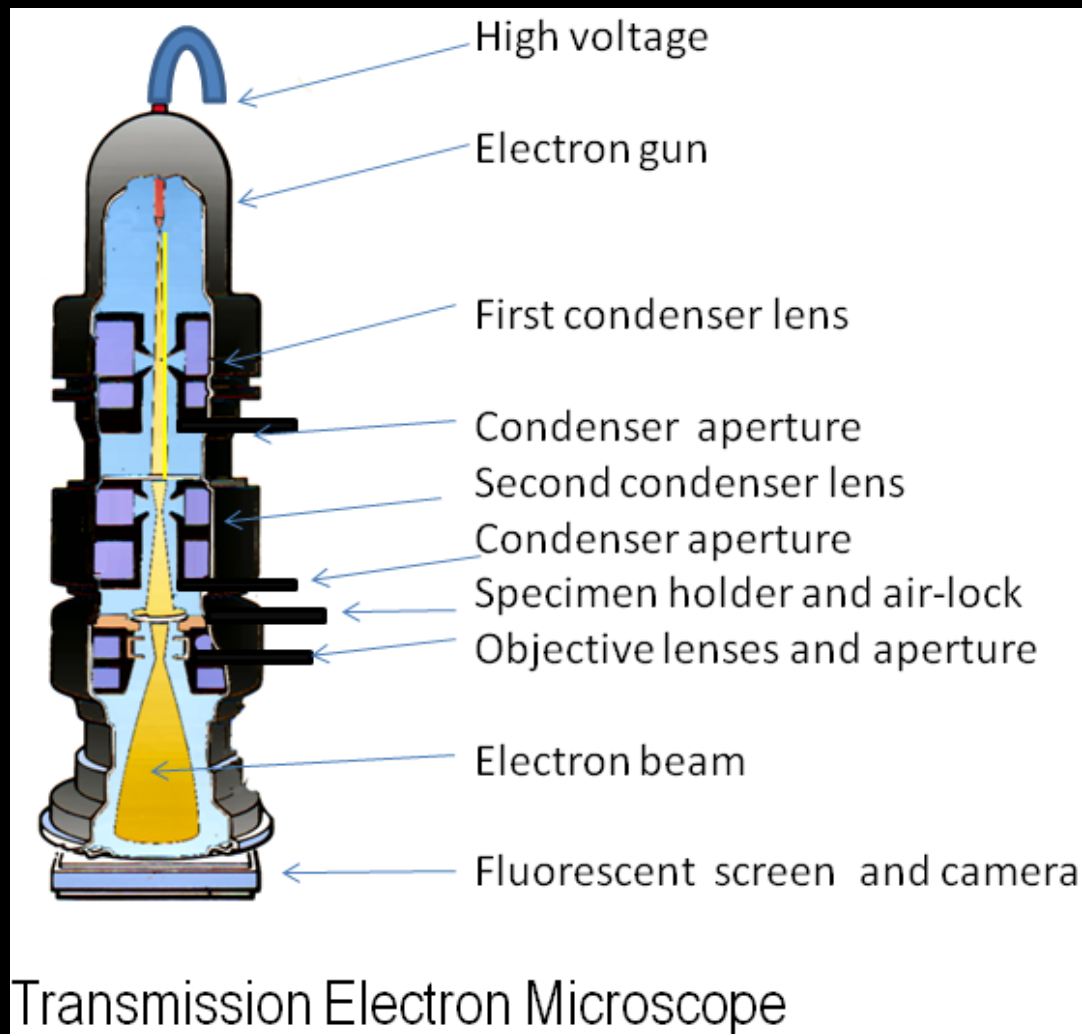
My Mission: to boldly go...



# Sample prep

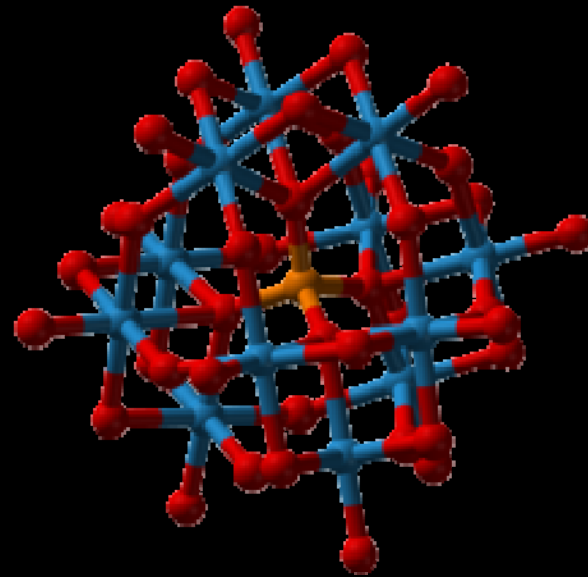


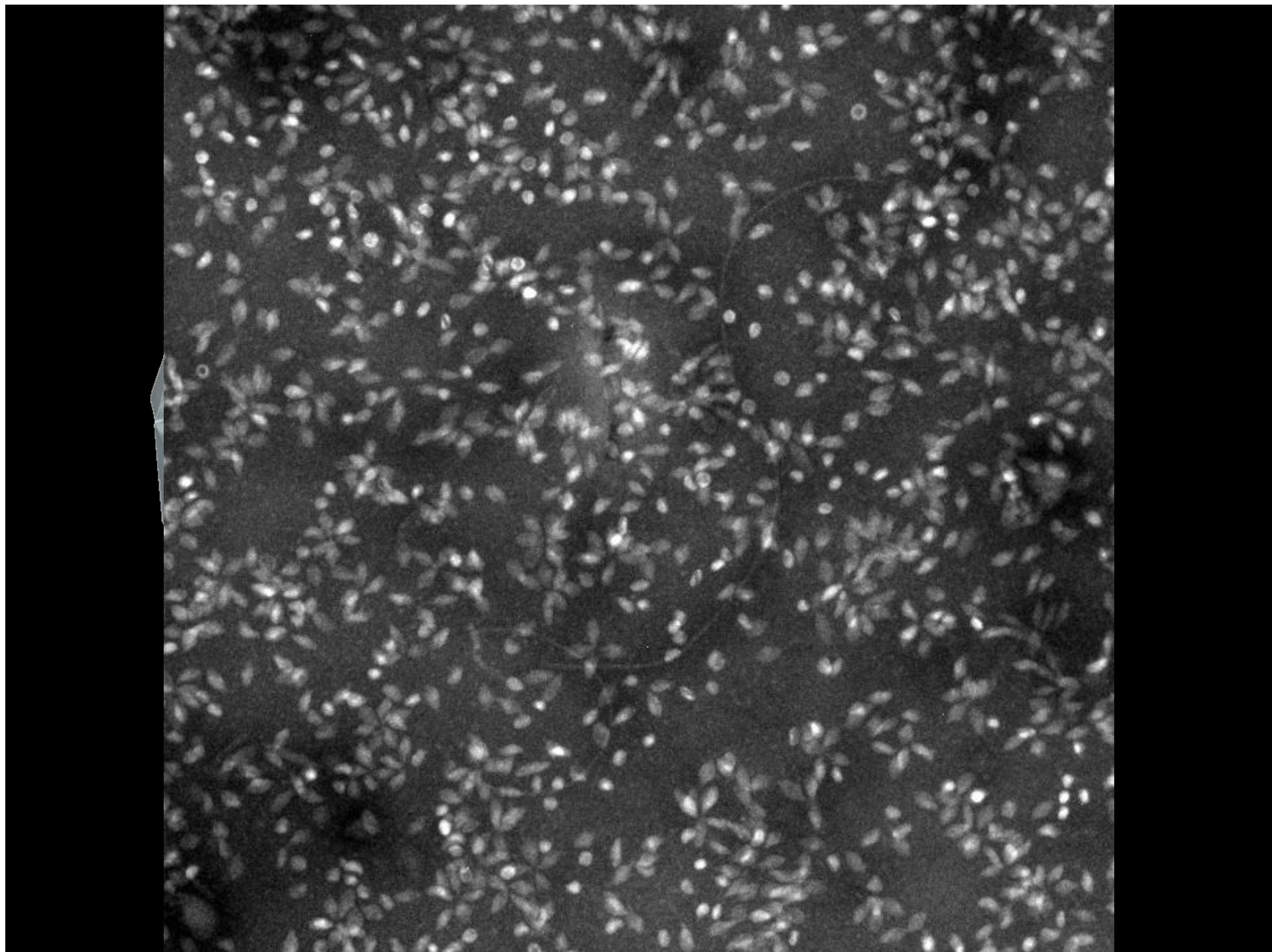
# Transmission Electron Microscopy



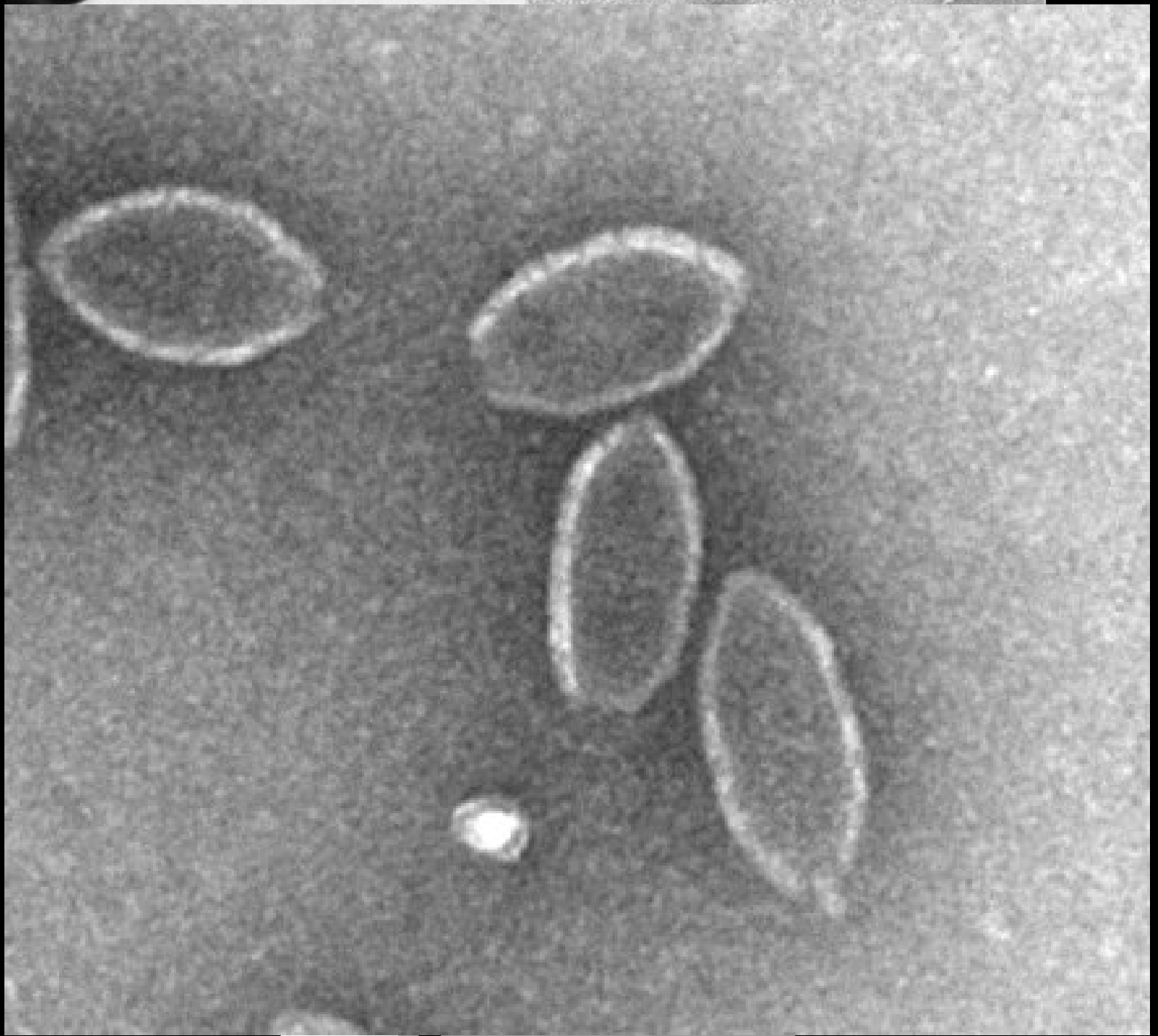
# Stain

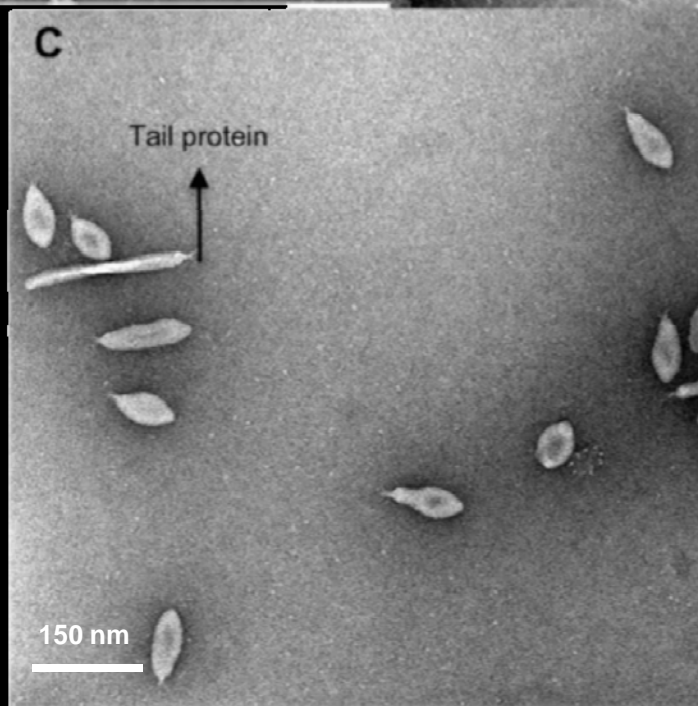
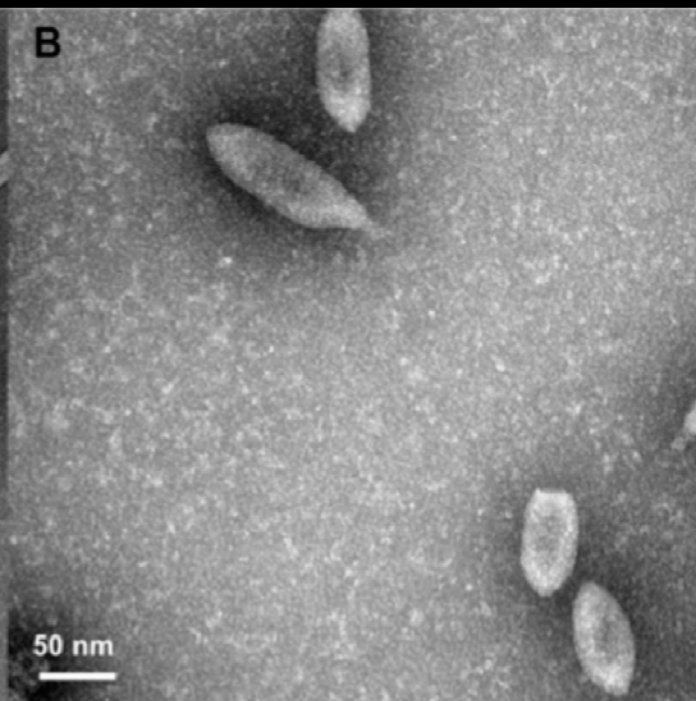
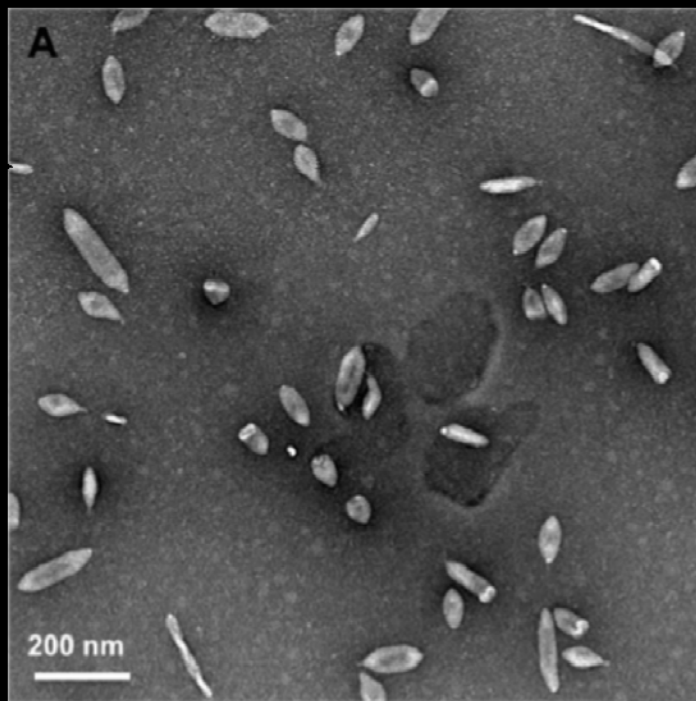
- Uranyl acetate vs. phosphotungstate







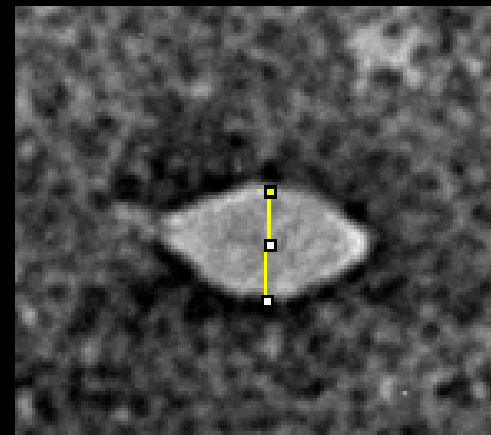
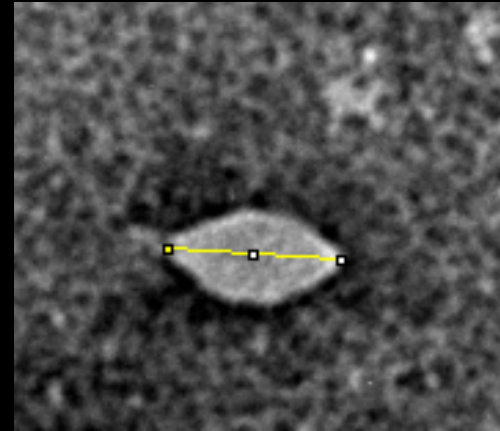




**MUTANTS!!!**

# Abnormal vs. Normal Particles

Standards	
Ratio	nanometers
average	2.54
stdev	0.43
upper range	3.41
lower range	1.68
Length	
average	77.10
stdev	7.14
upper range	91.37
lower range	62.82
Width	
average	40.75
stdev	5.33
upper range	51.41
lower range	30.08

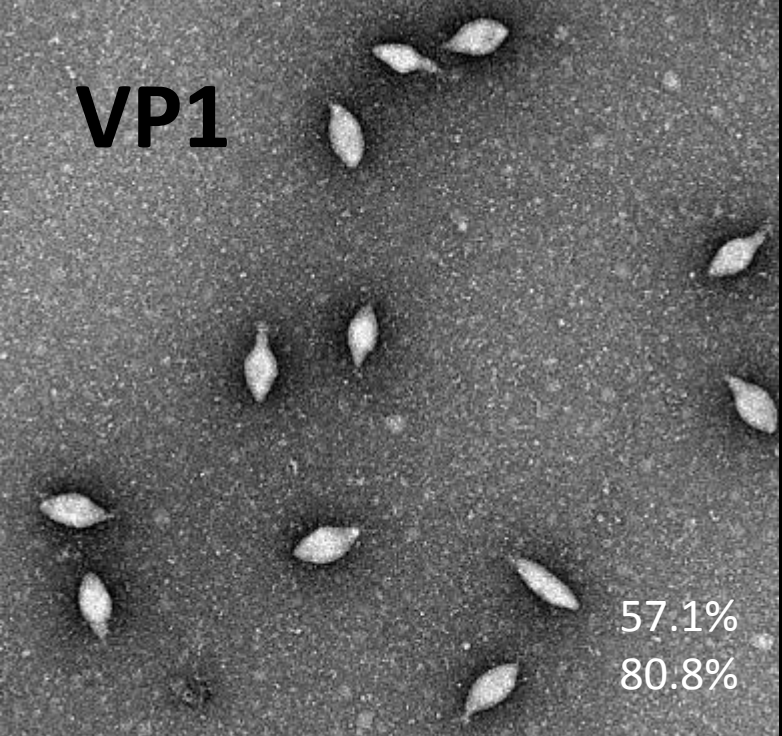


**VP3**



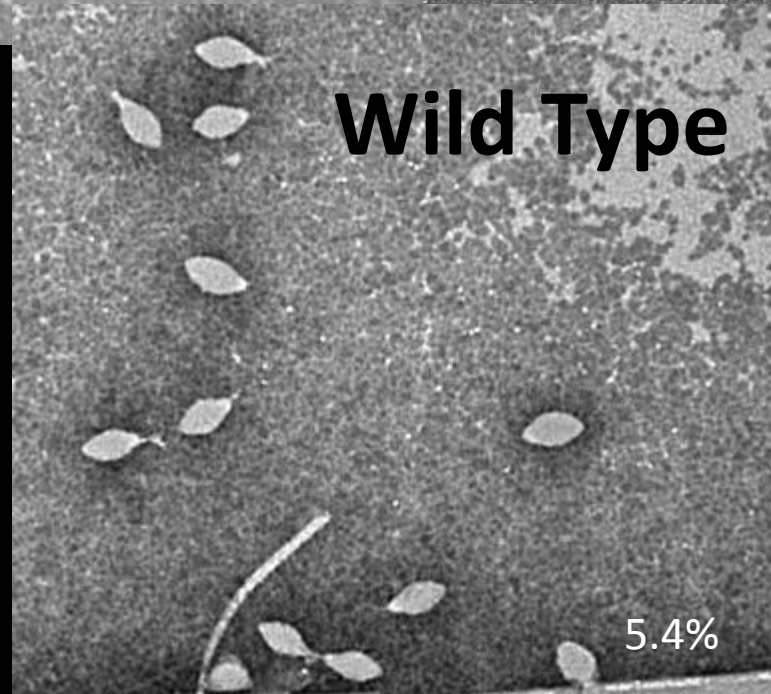
97.7%  
100%

**VP1**



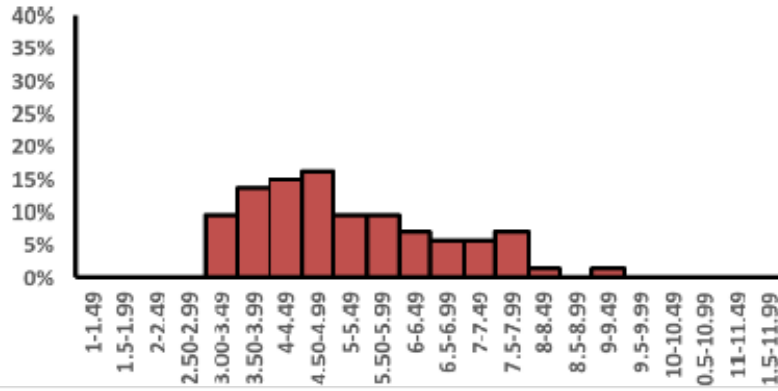
57.1%  
80.8%

**Wild Type**

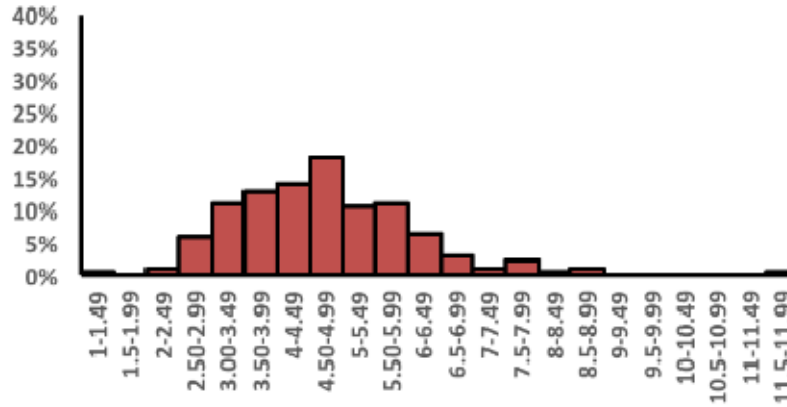


5.4%

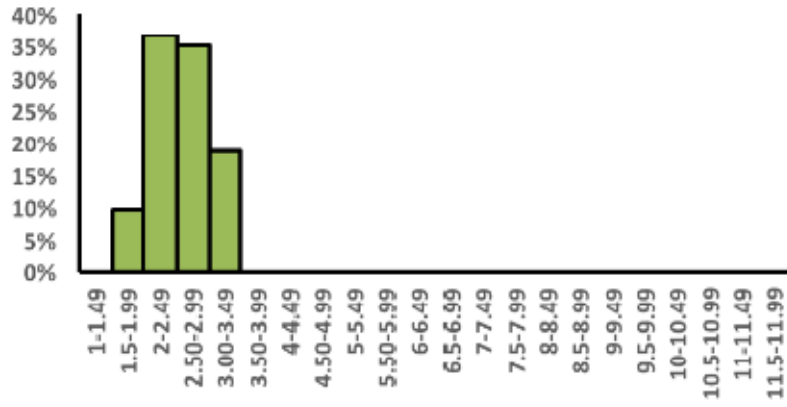
VP3 476



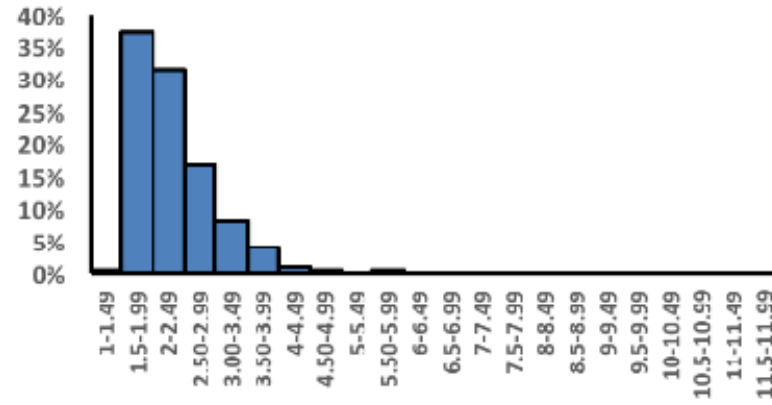
VP3 446



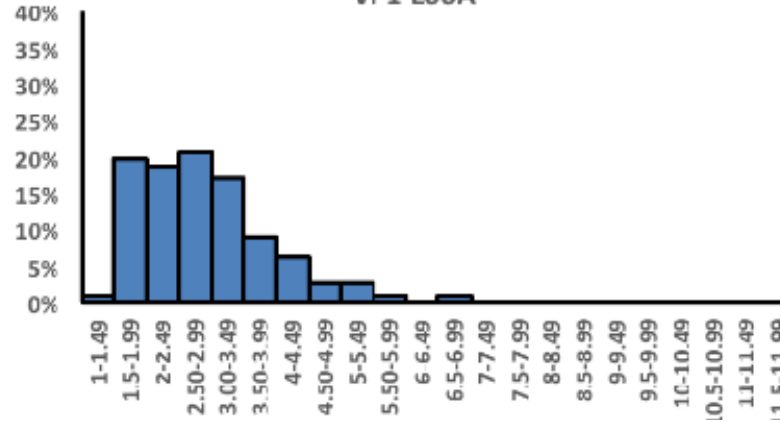
SSV1 Wild Type



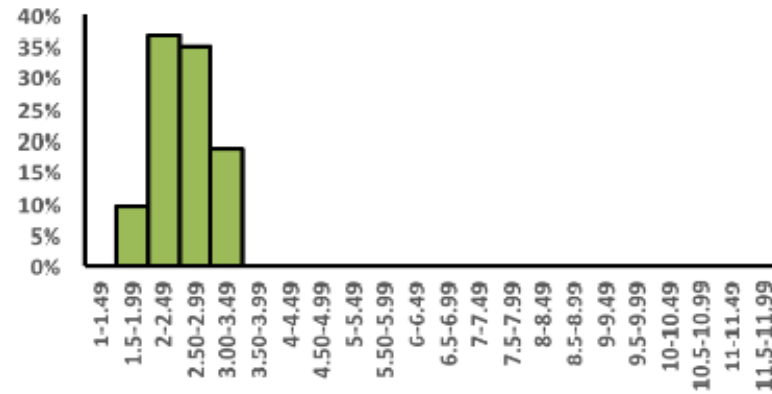
VP1 E66Q



VP1 E66A



SSV1 Wild Type



# Future Work

- Other mutants
- Different stain percentages
- More data!





**Ken Stedman, David Goodman,  
Kayla Gadd, Nick Leeman, Jared  
Kerman, Ellie Bradley, Gabriel,  
Greg and Tony**