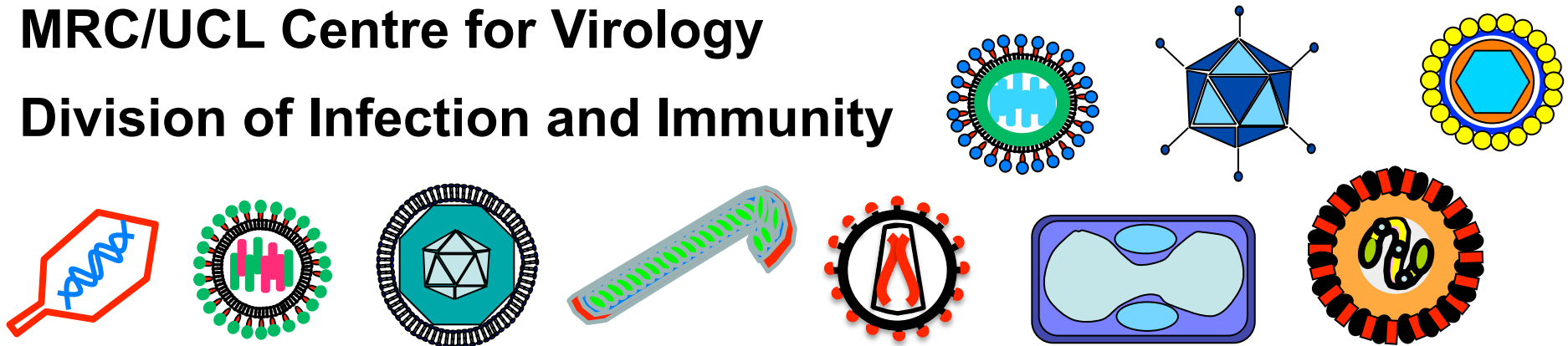




**MRC/UCL Centre for Virology**  
**Division of Infection and Immunity**

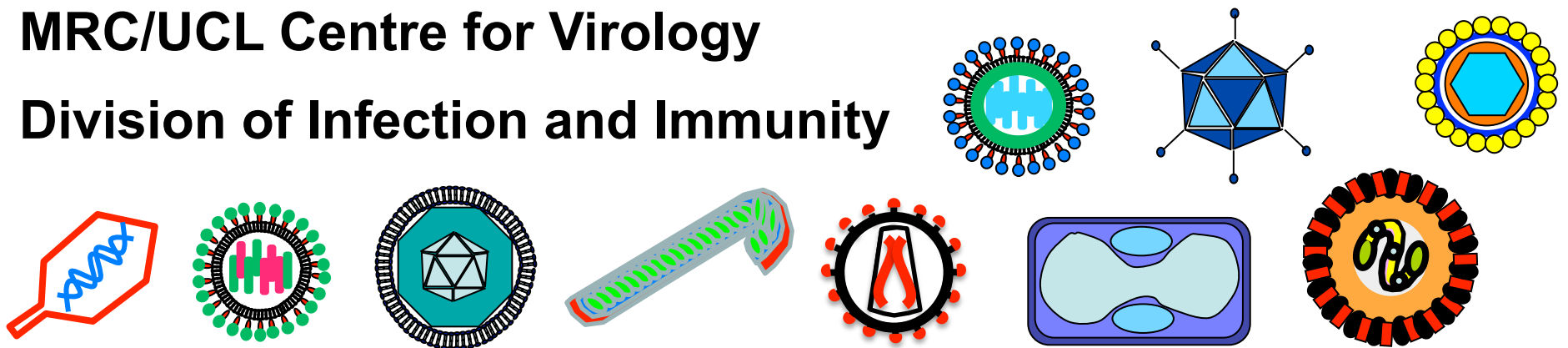




# What is Science?



**MRC/UCL Centre for Virology**  
**Division of Infection and Immunity**



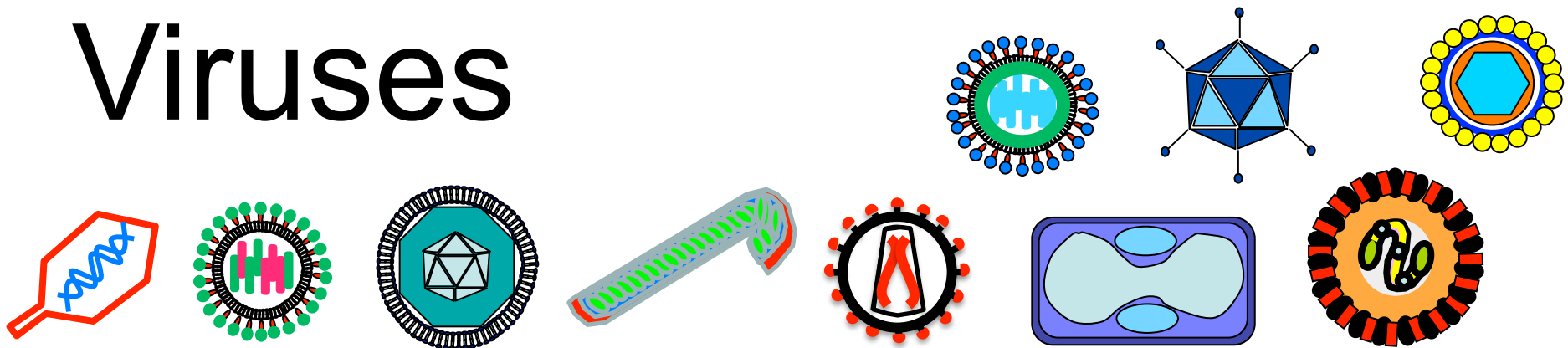




# Virology

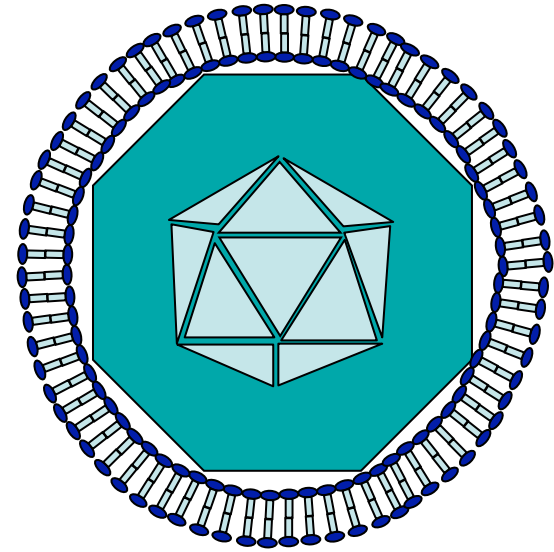


# Viruses

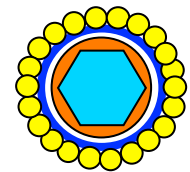
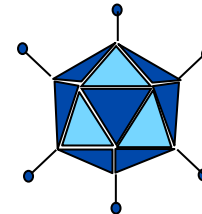
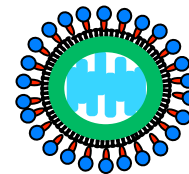
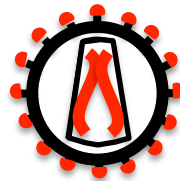
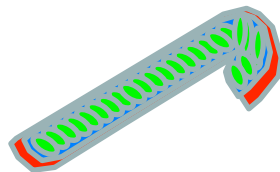
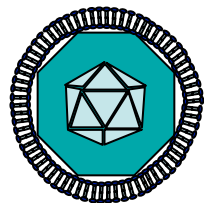
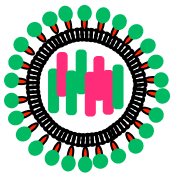
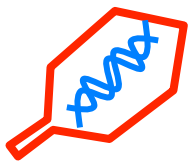




Have you had...



Viruses

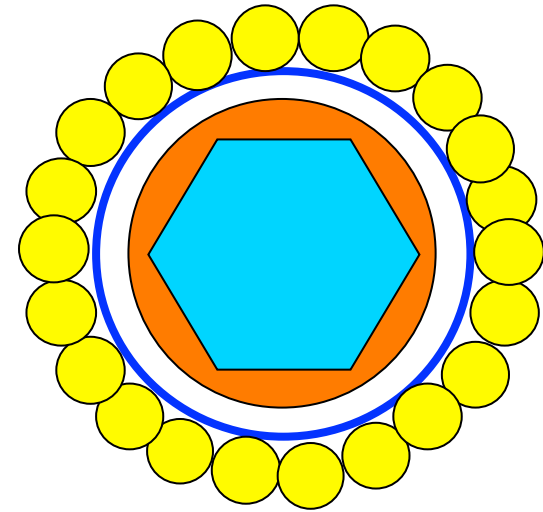




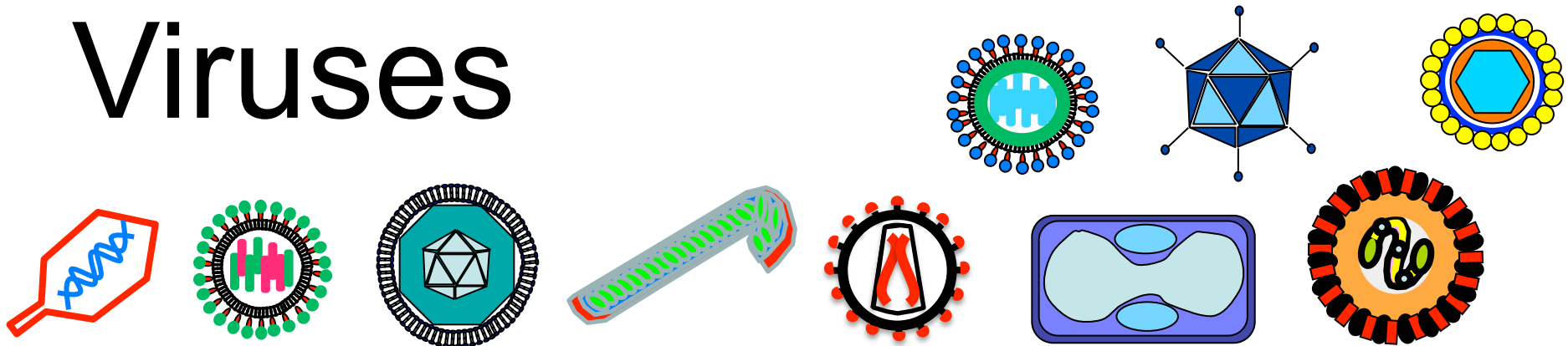
# Chicken Pox



Have you had...



Viruses

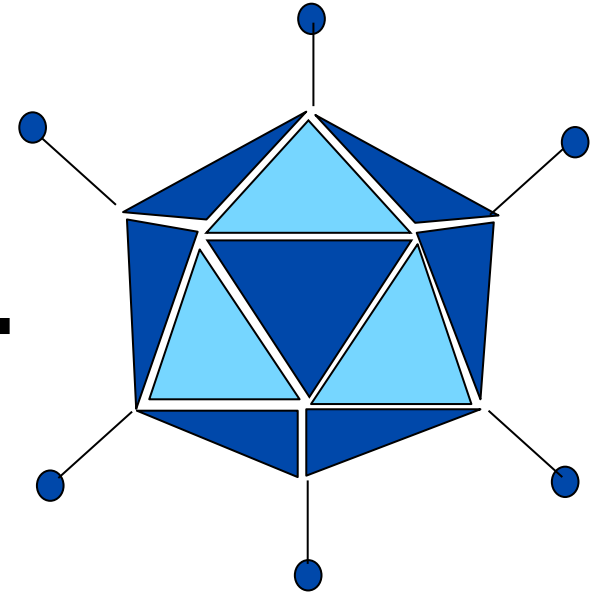


# Herpes simplex

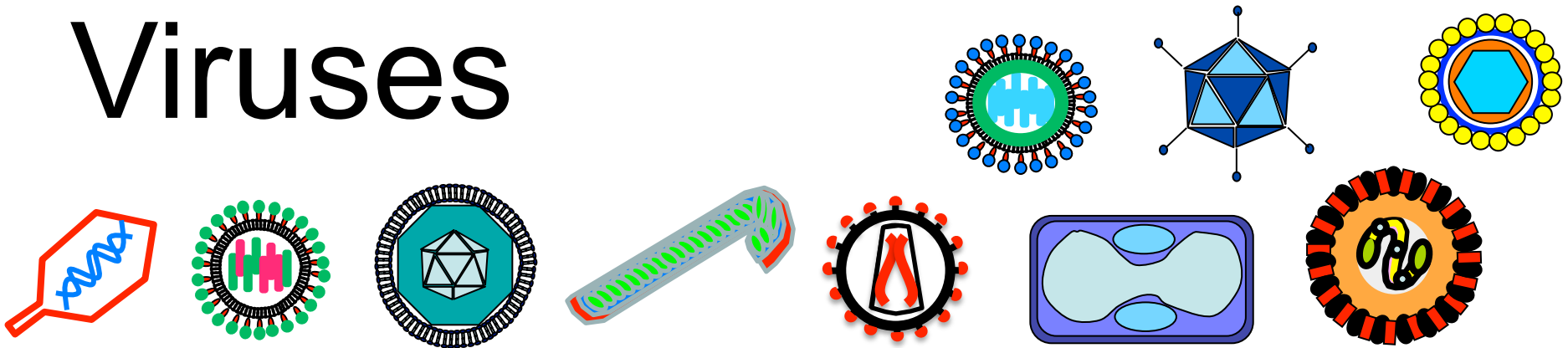




# Have you had...



# Viruses



# Foot and Mouth





Three Broken Tulips (Nicolas Robert 1624-1685)  
Fitzwilliam museum, Cambridge





> 5,000 different viruses  
in 100 ml of seawater,

A photograph of a bright blue sky filled with numerous white, fluffy clouds of varying sizes. The clouds are scattered across the frame, with some appearing larger and more detailed than others. The overall scene is a clear, sunny day.

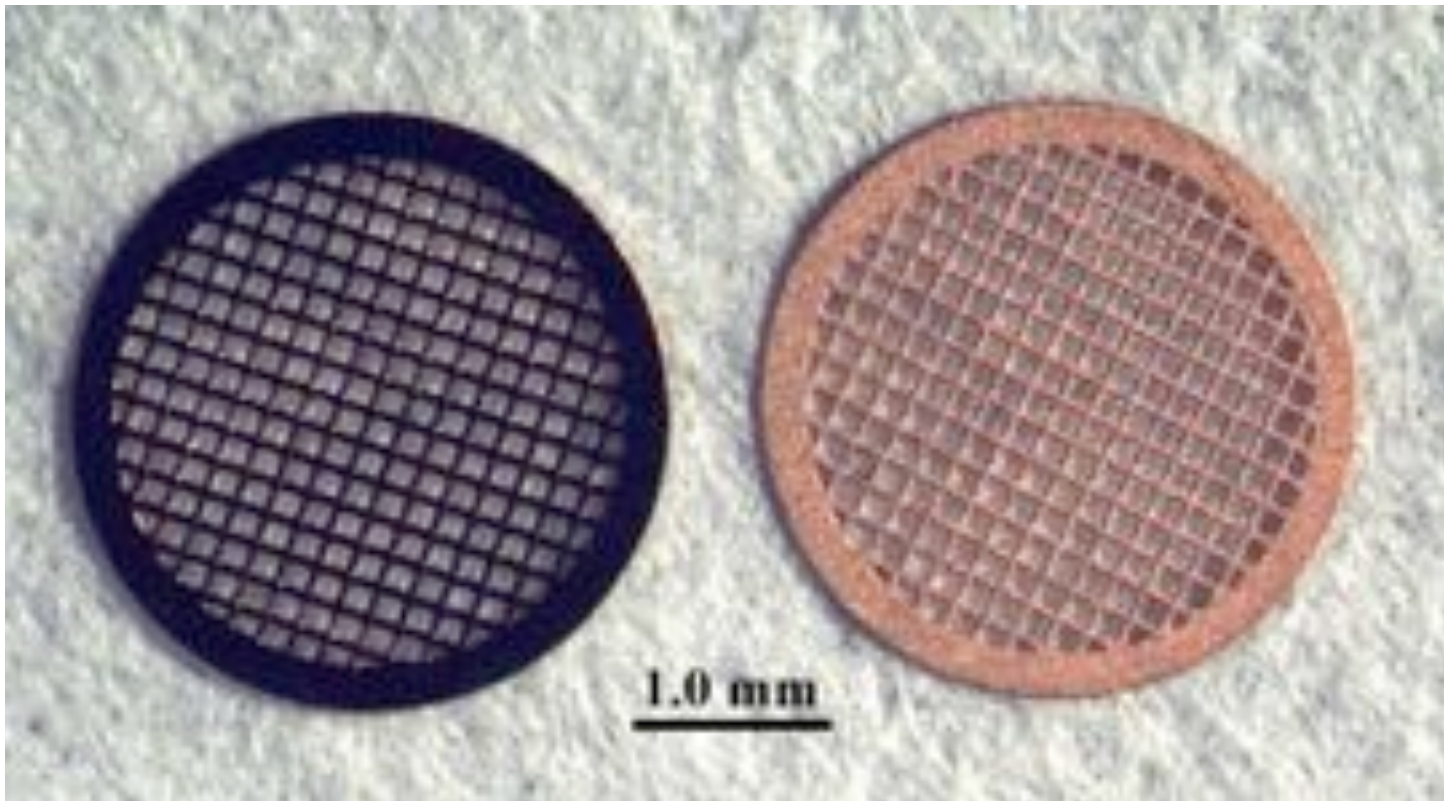
**40 million viruses  
in one cubic metre  
of air**



***Electron Microscope***

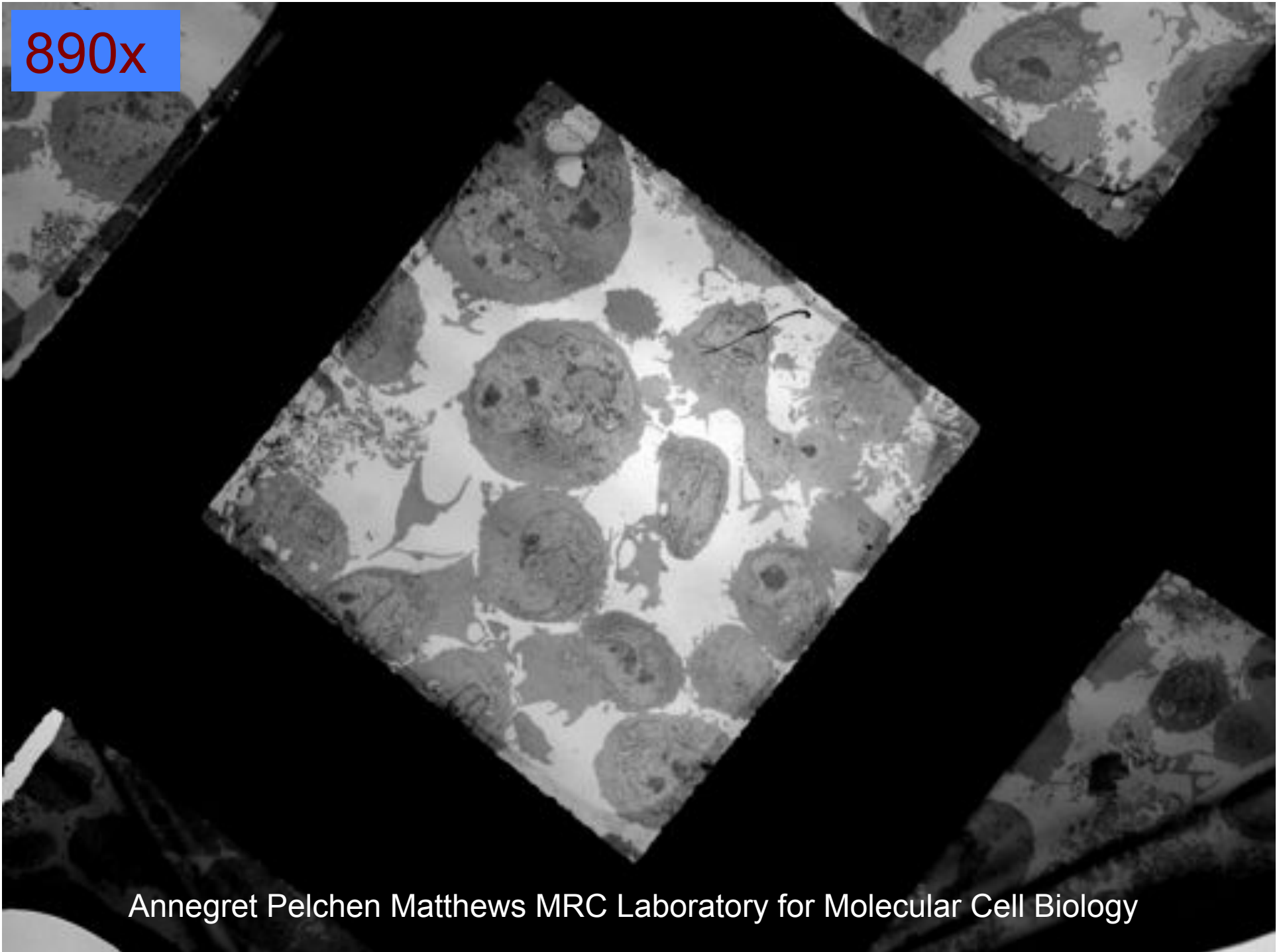


# Electron Microscope Specimen Grid, 3 mm



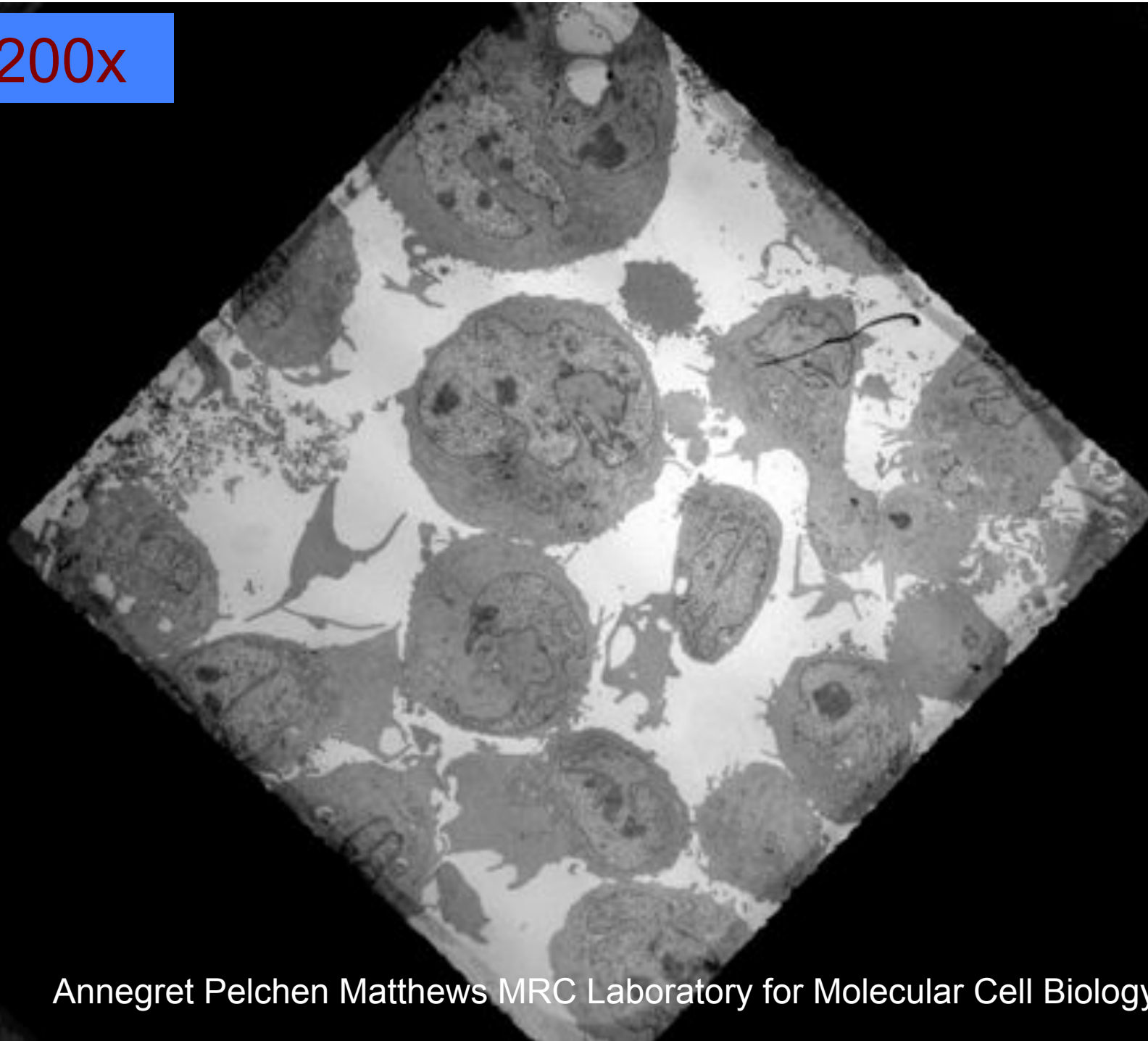
Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

890x



Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

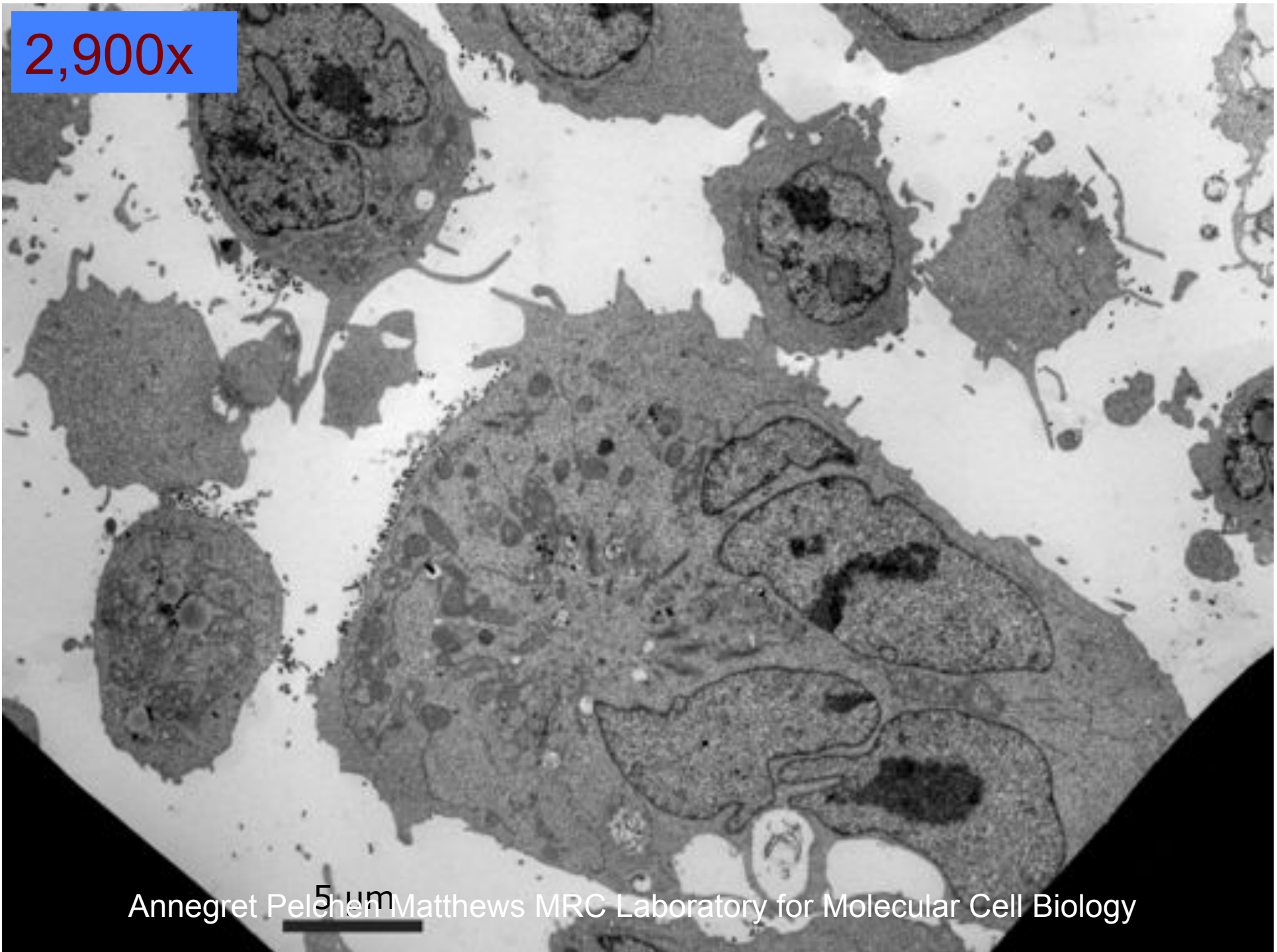
1,200x



Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

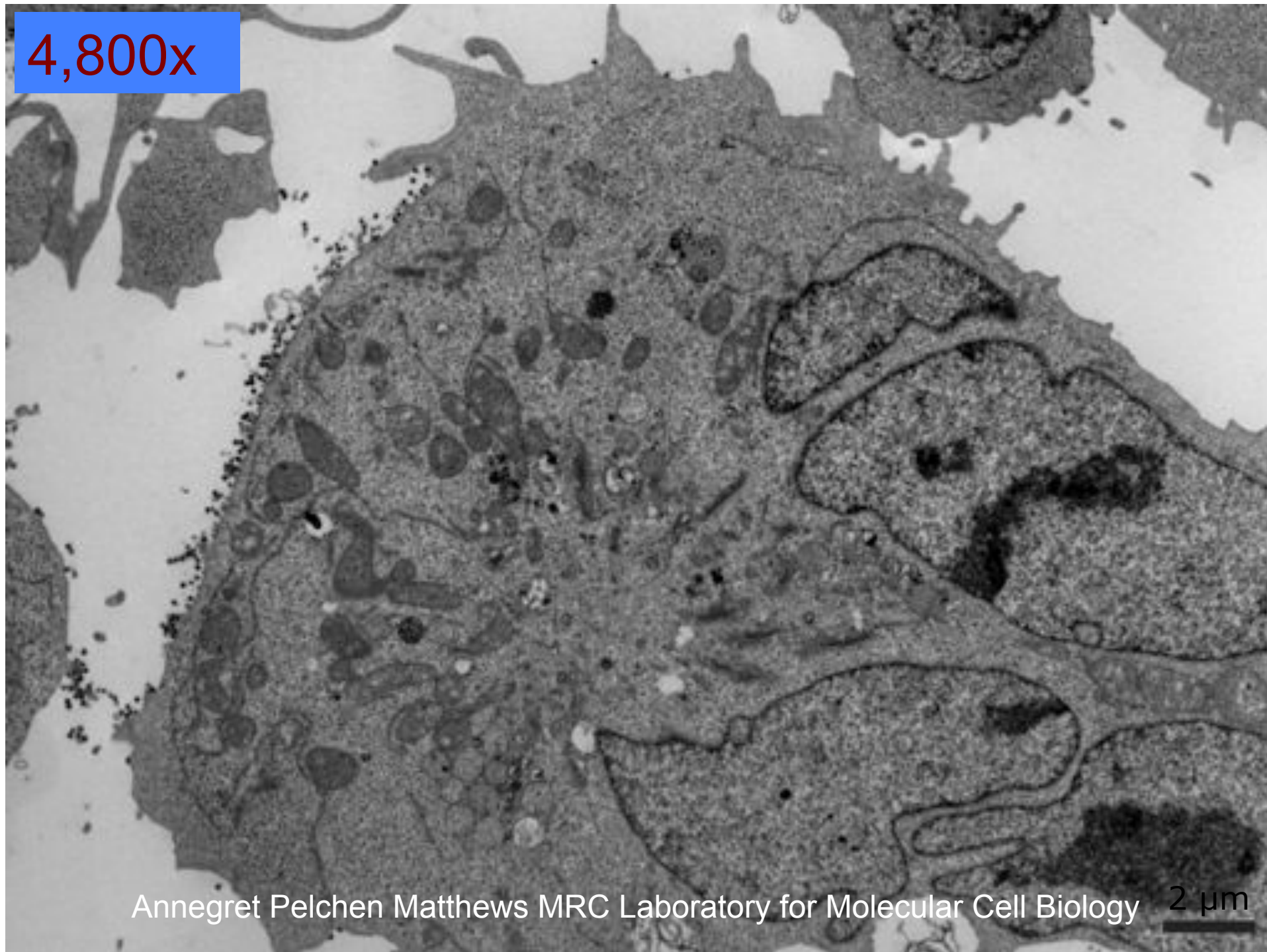


2,900x



5  $\mu$ m  
Annegret Pelchen-Matthews MRC Laboratory for Molecular Cell Biology

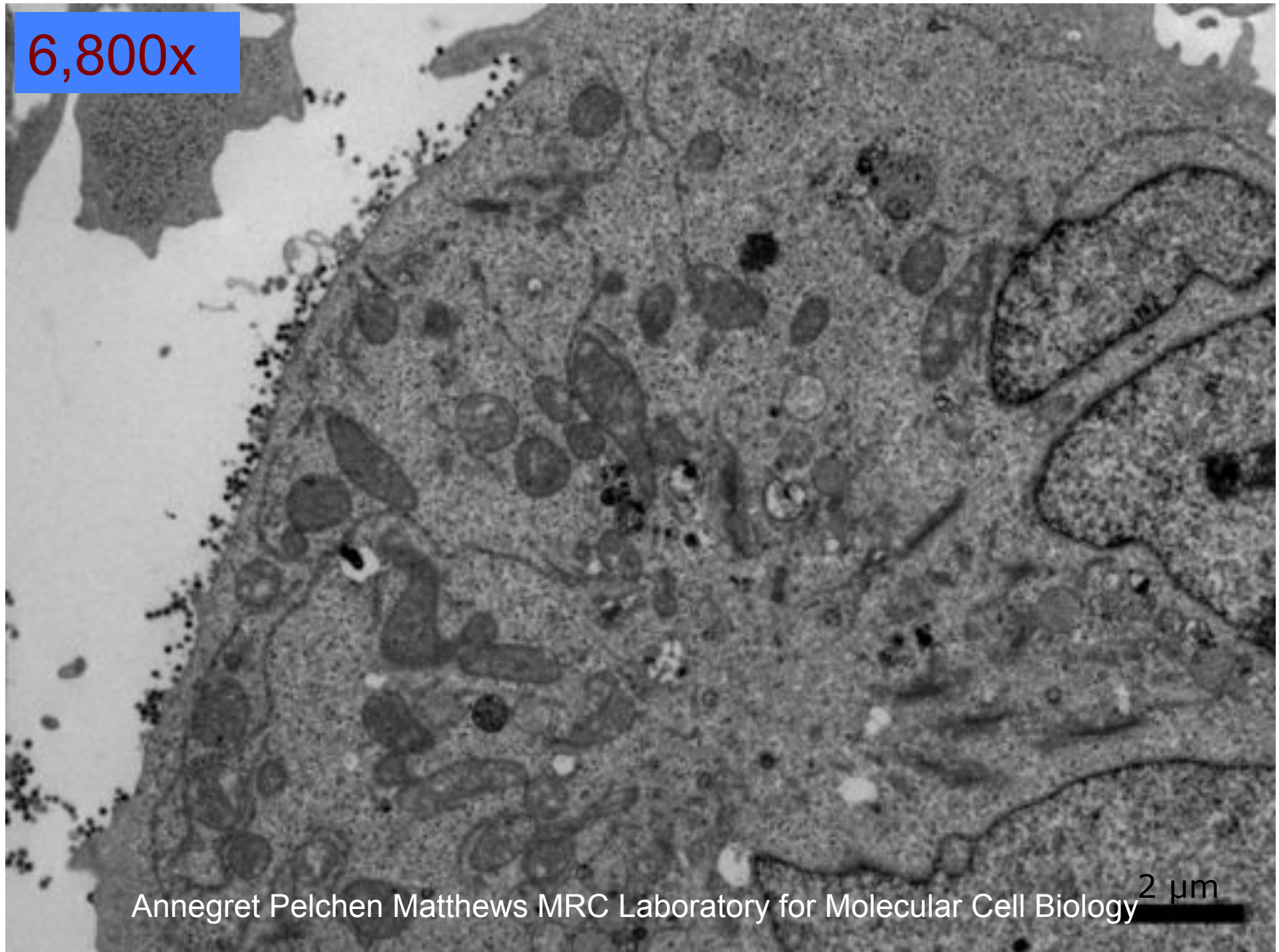
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Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology 2  $\mu\text{m}$



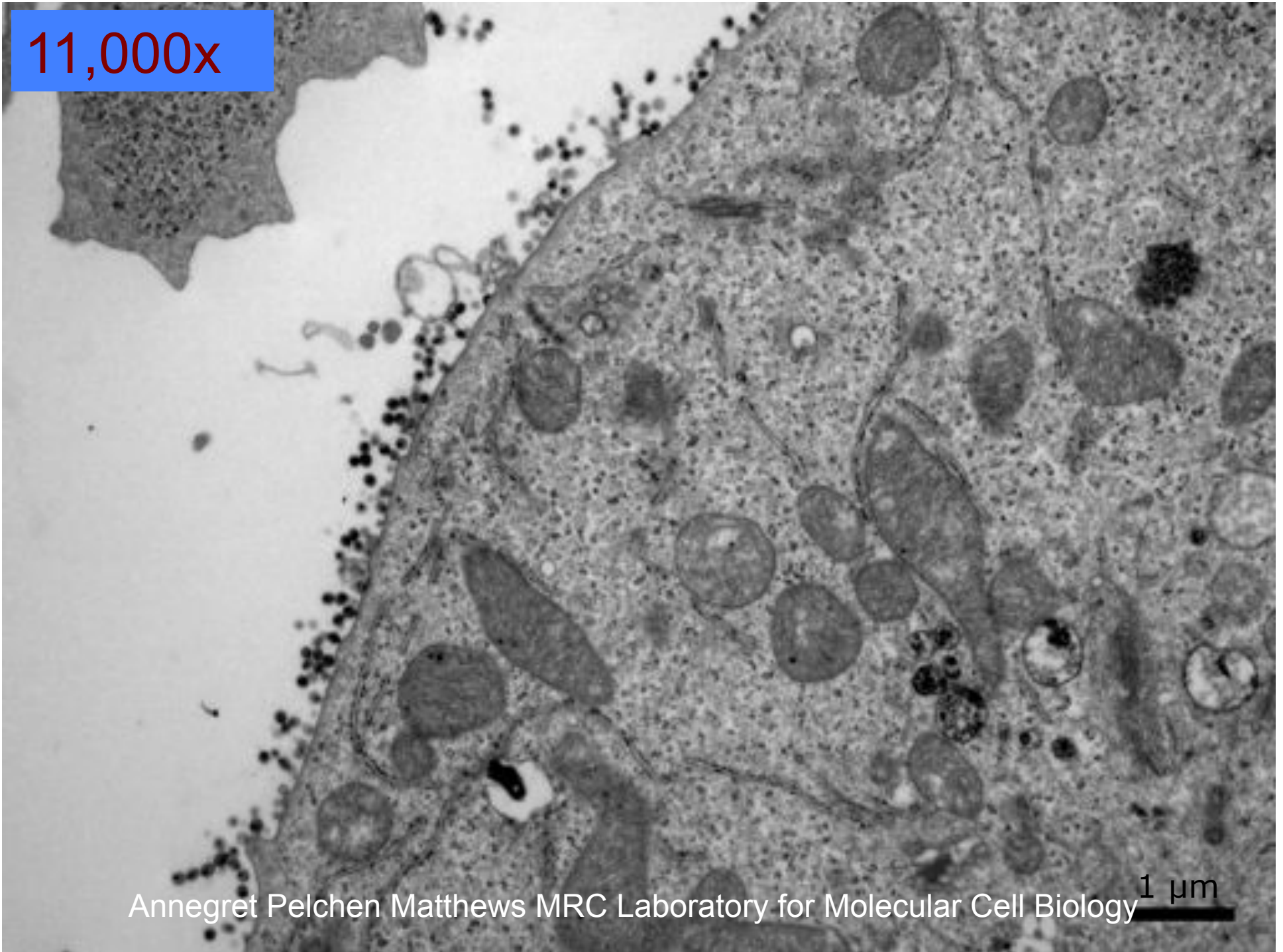
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Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology  $2 \mu\text{m}$

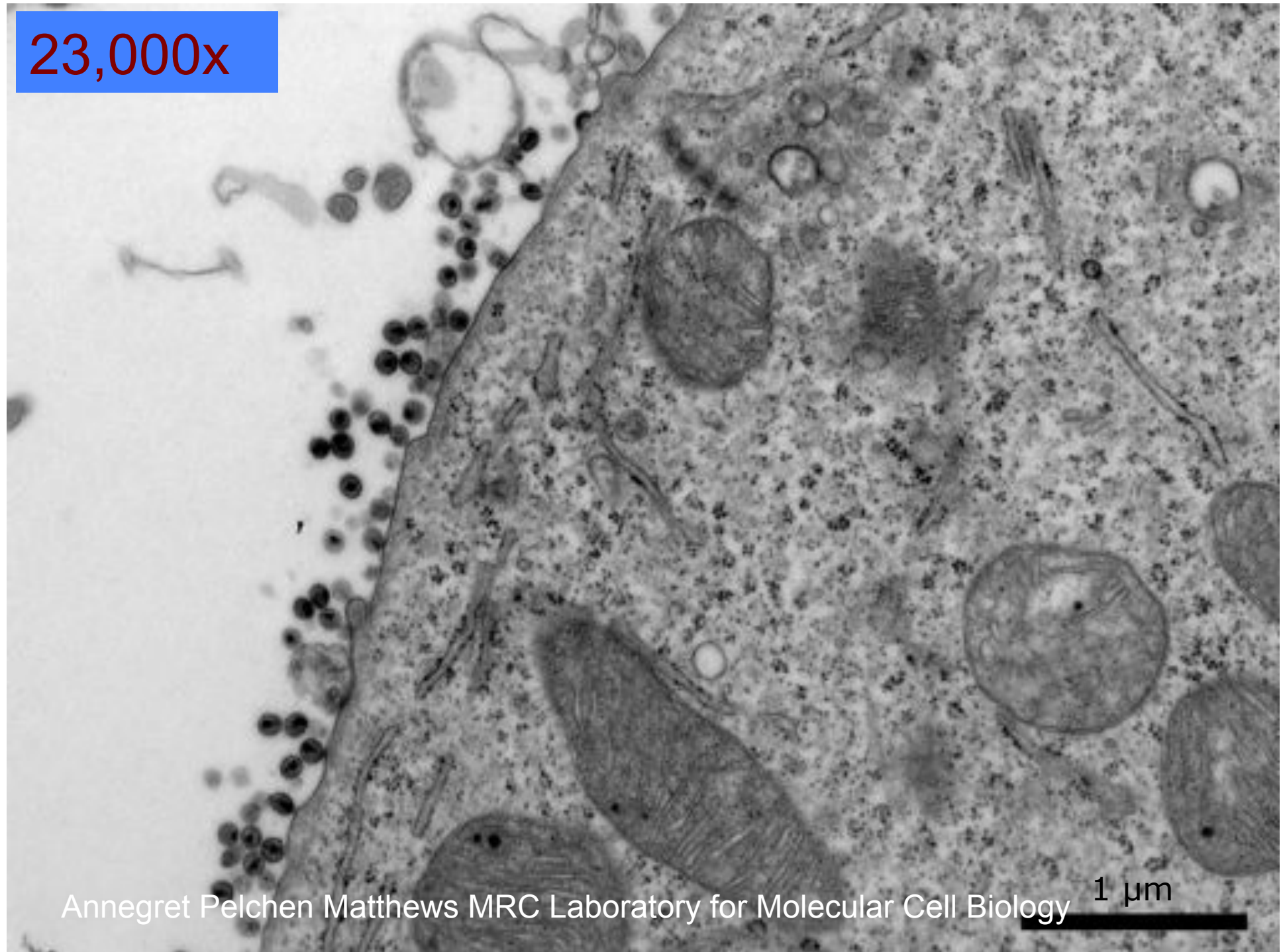
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Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology 



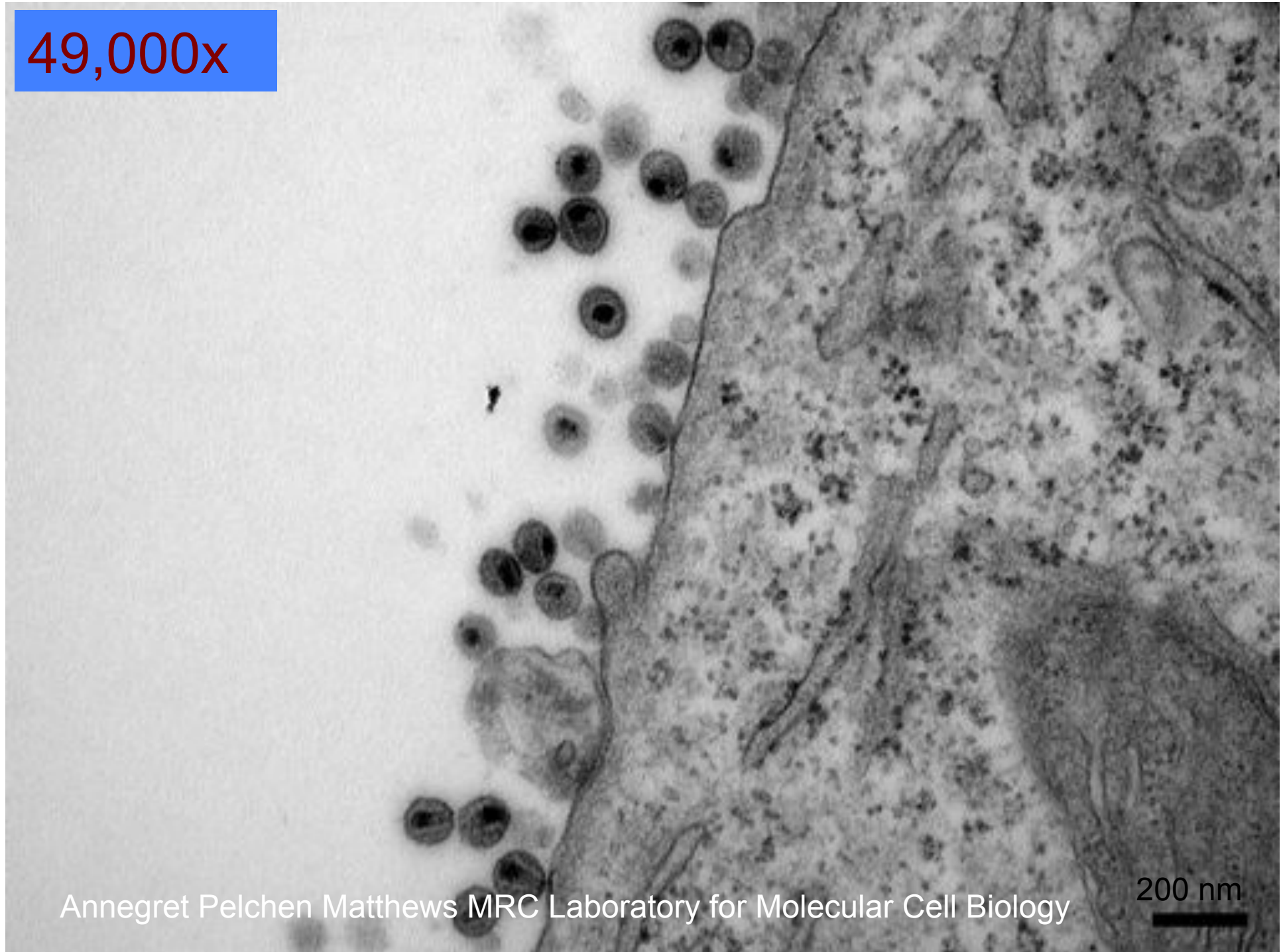


23,000x



Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology 1  $\mu\text{m}$

49,000x



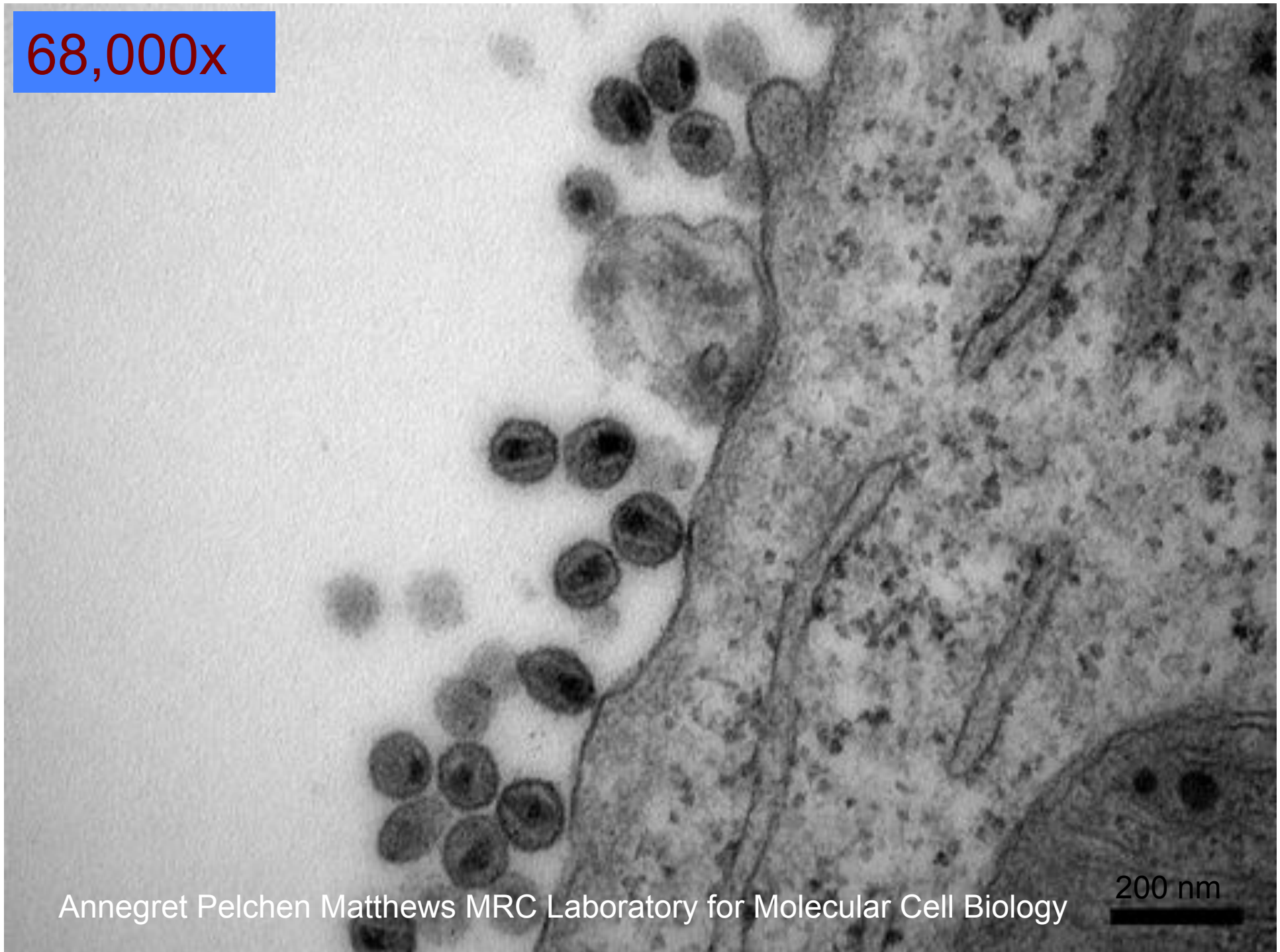
Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

200 nm





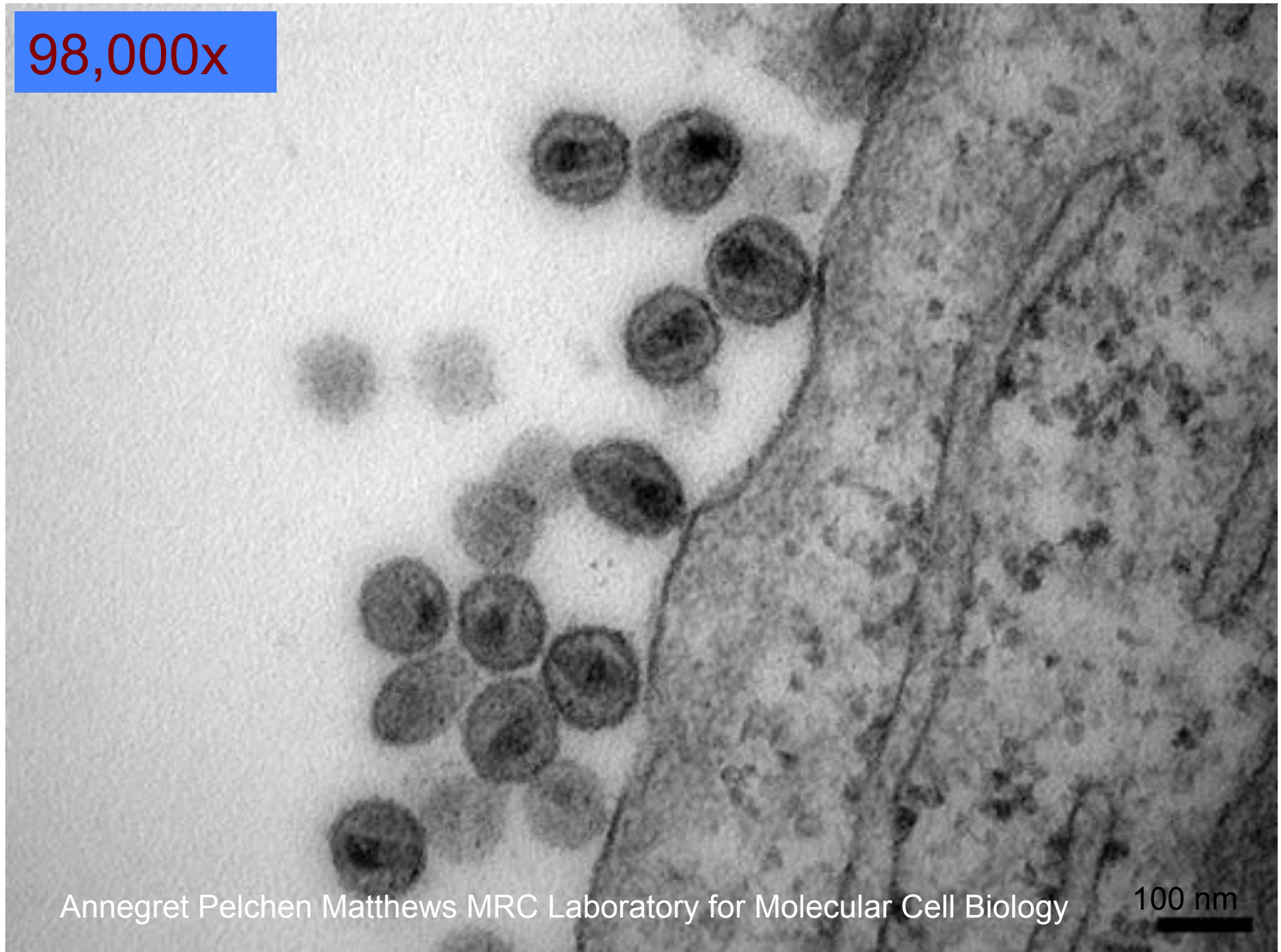
68,000x



Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

200 nm

98,000x

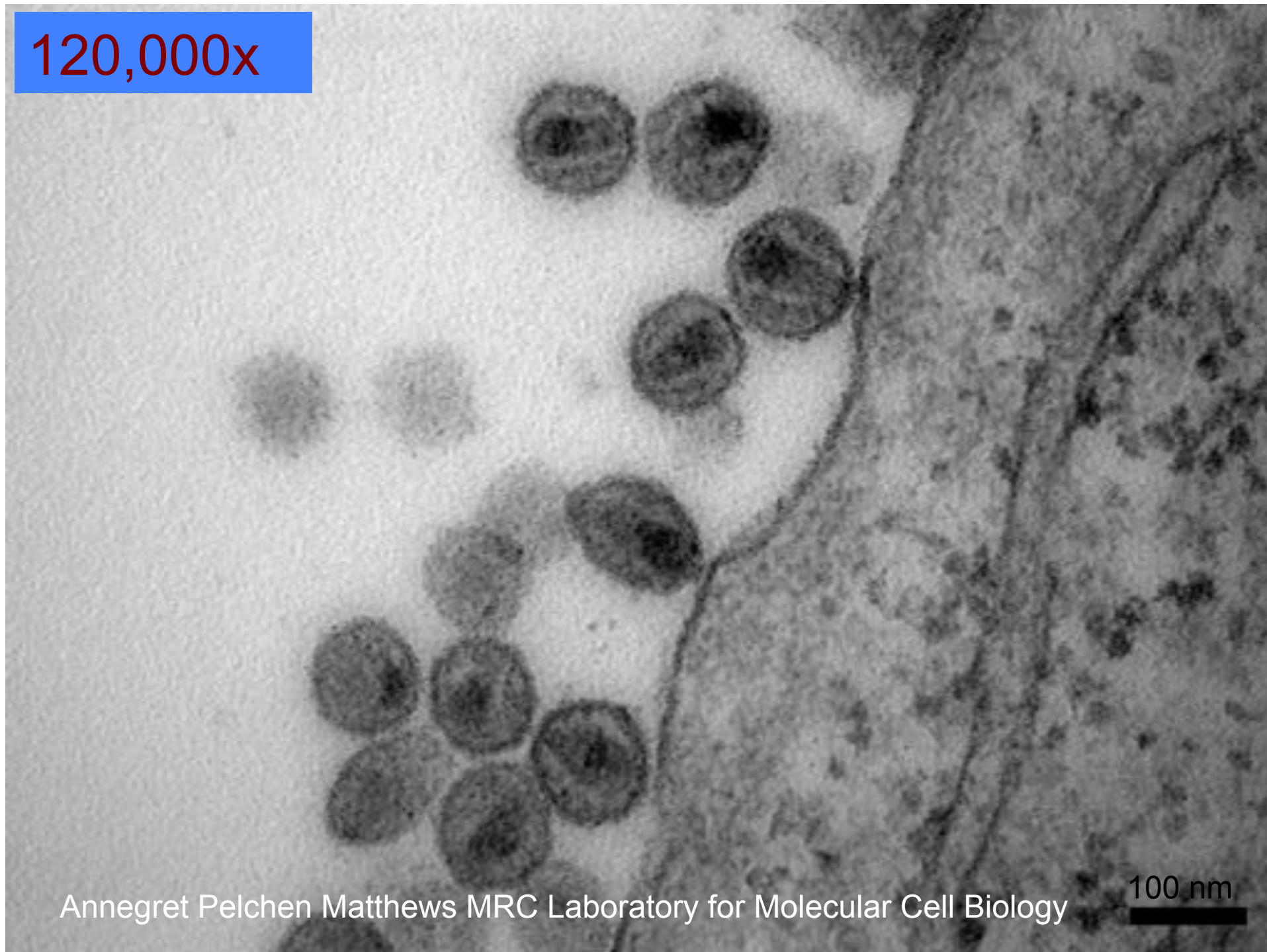


Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

100 nm



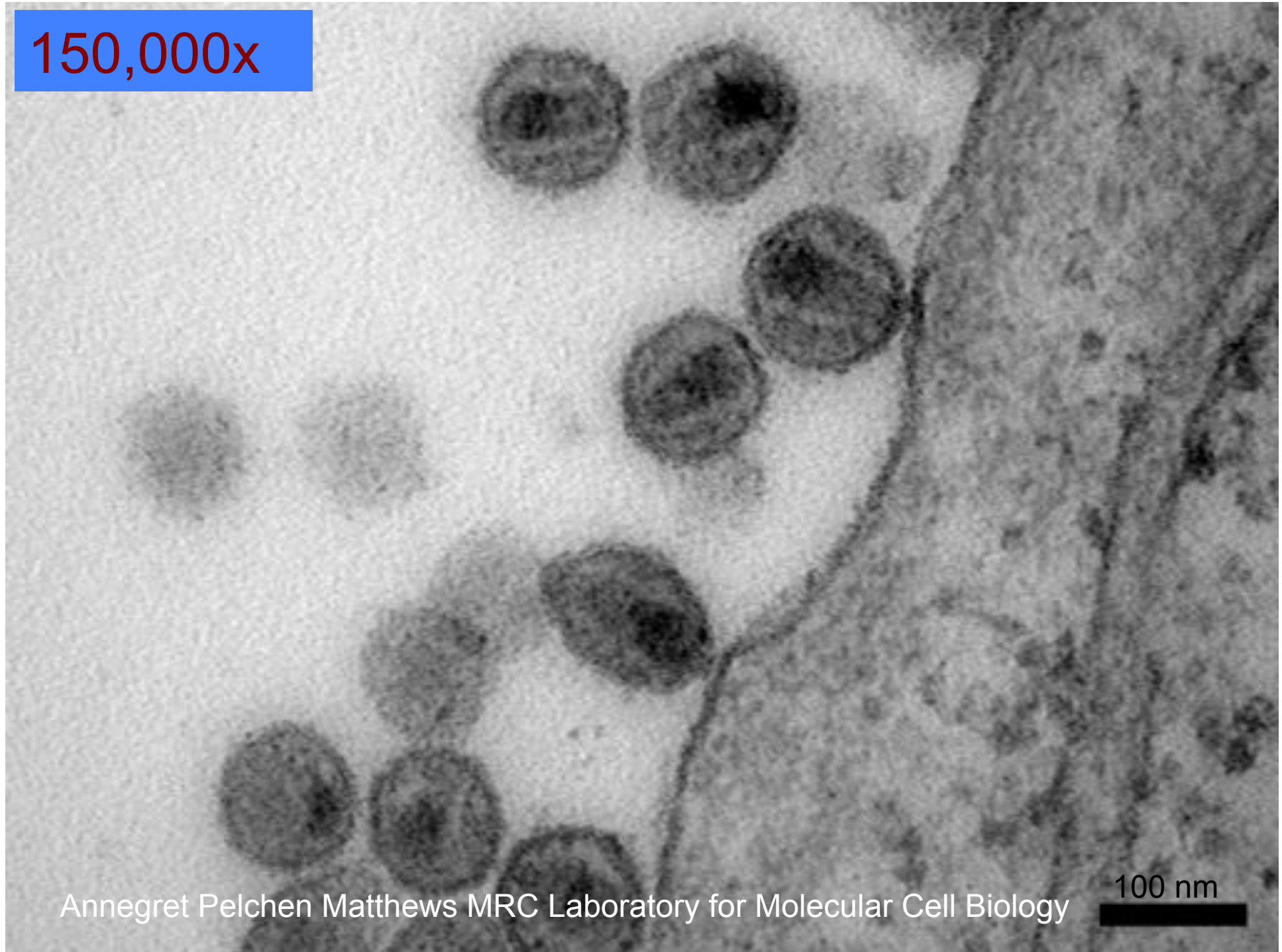
120,000x



Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

100 nm

150,000x

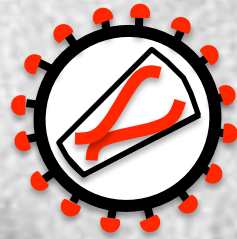


Annegret Pelchen Matthews MRC Laboratory for Molecular Cell Biology

100 nm

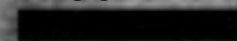


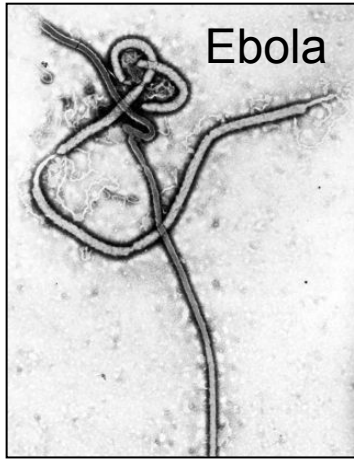
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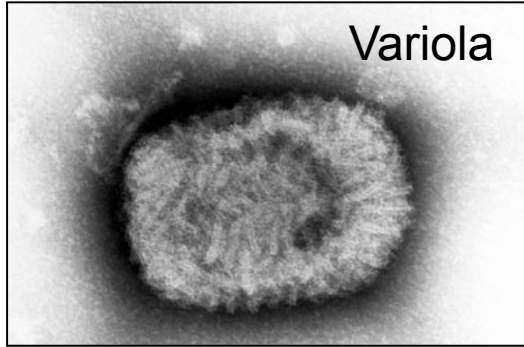
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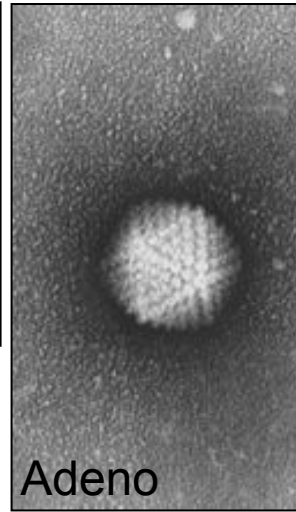




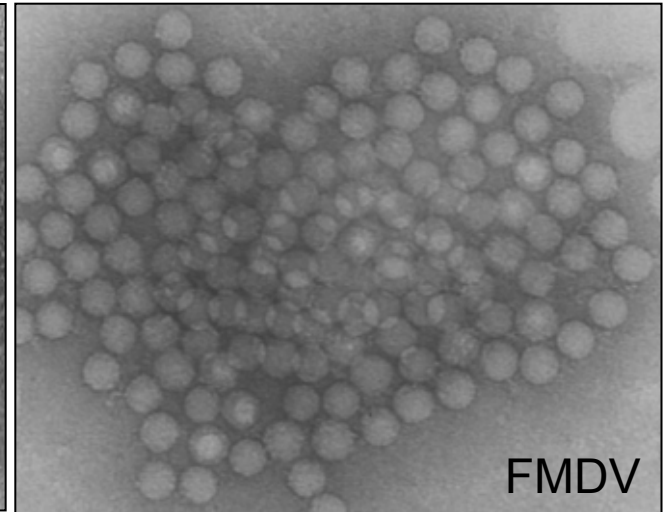
Ebola



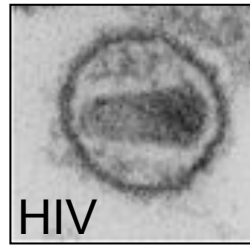
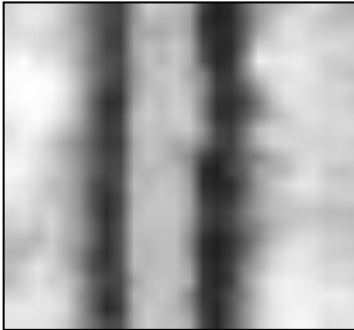
Variola



Adeno

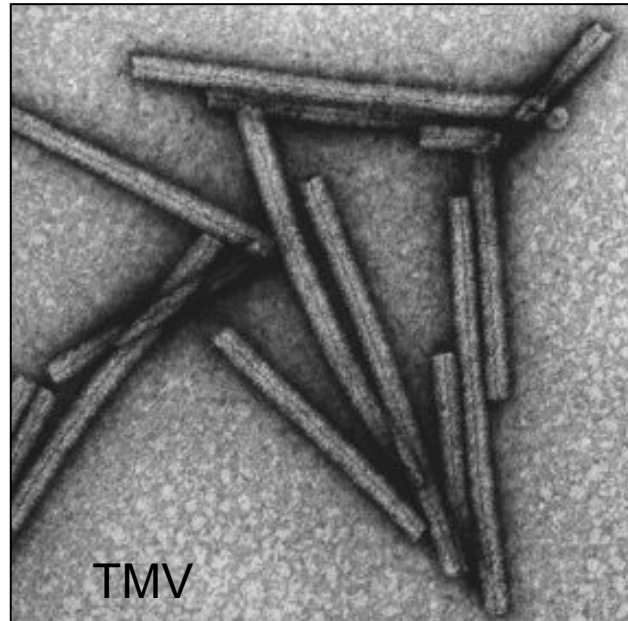


FMDV

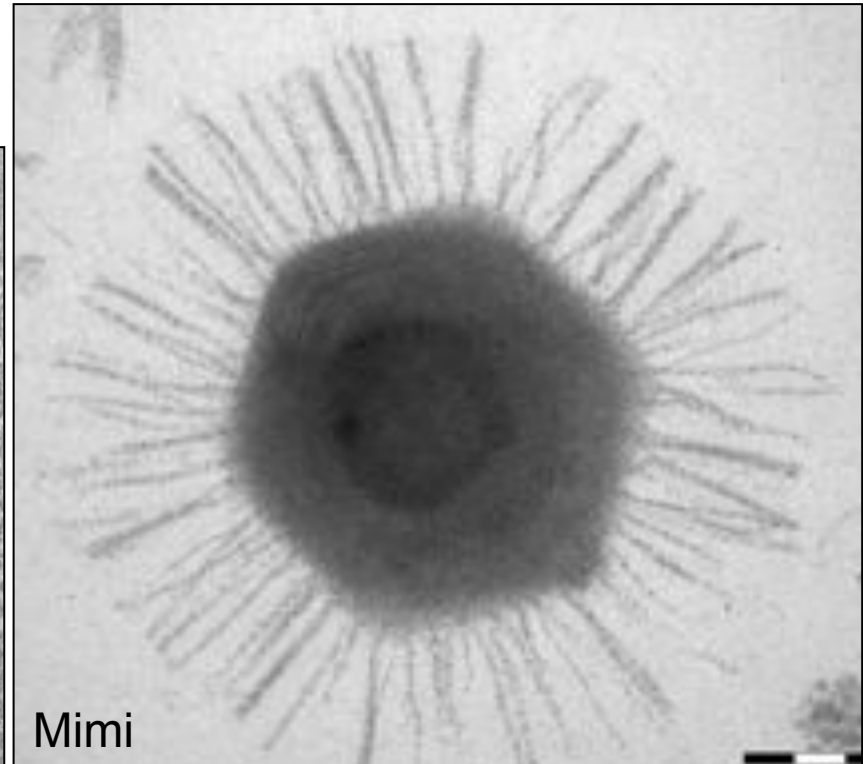


HIV

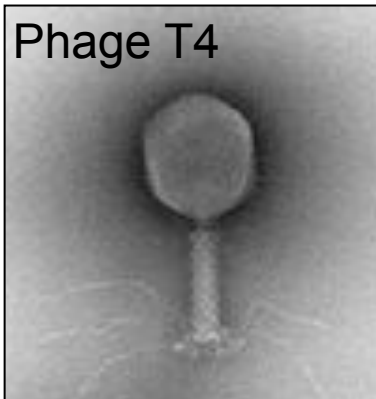
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TMV

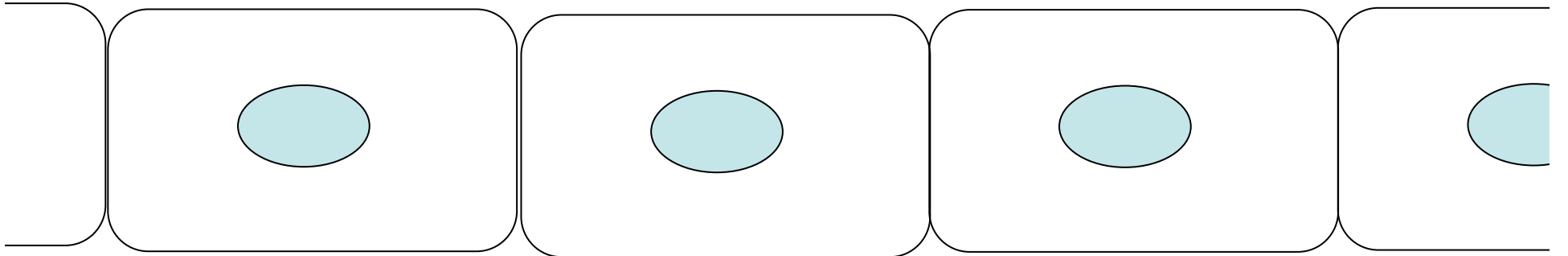
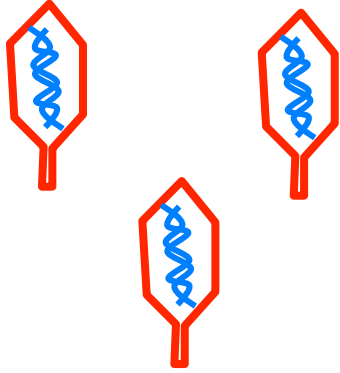


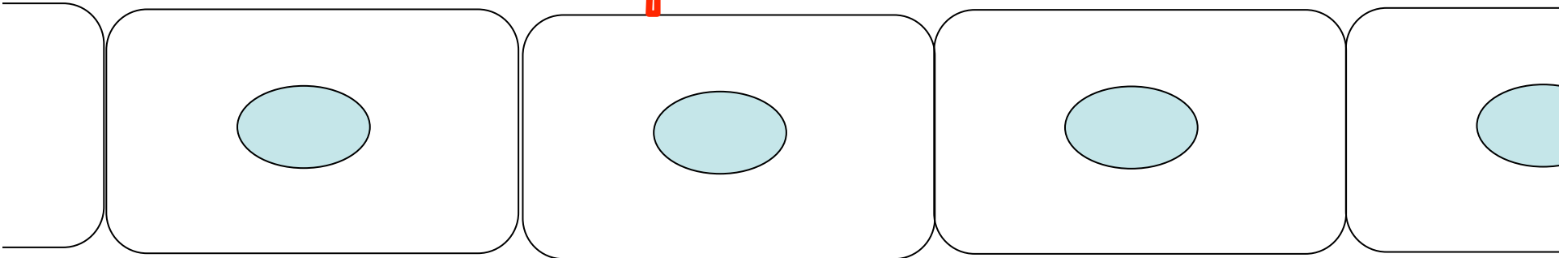
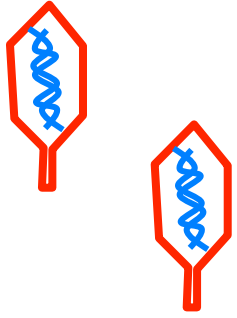
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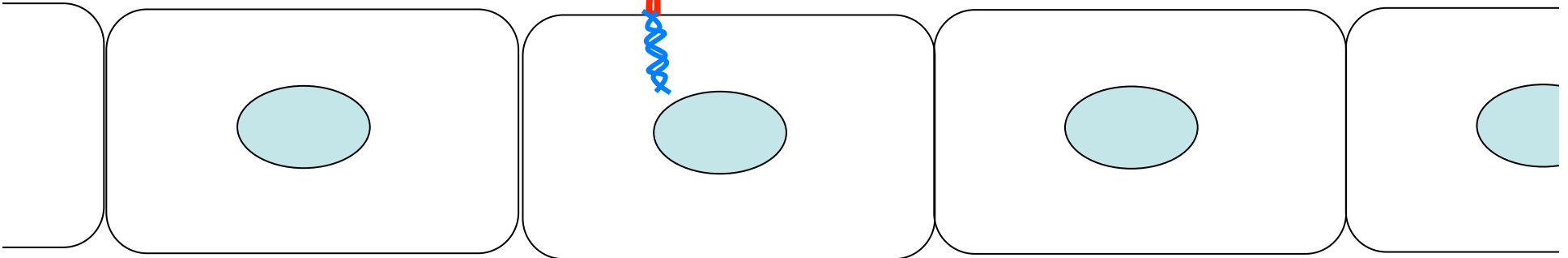
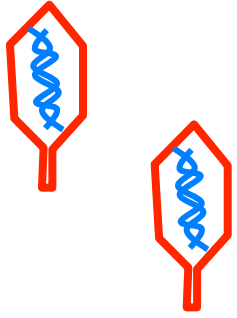


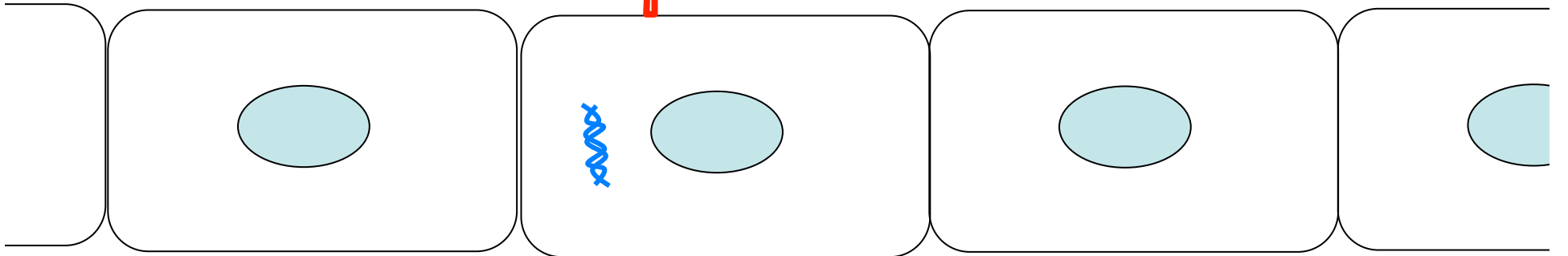
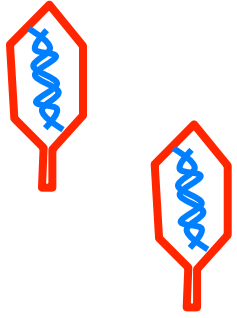
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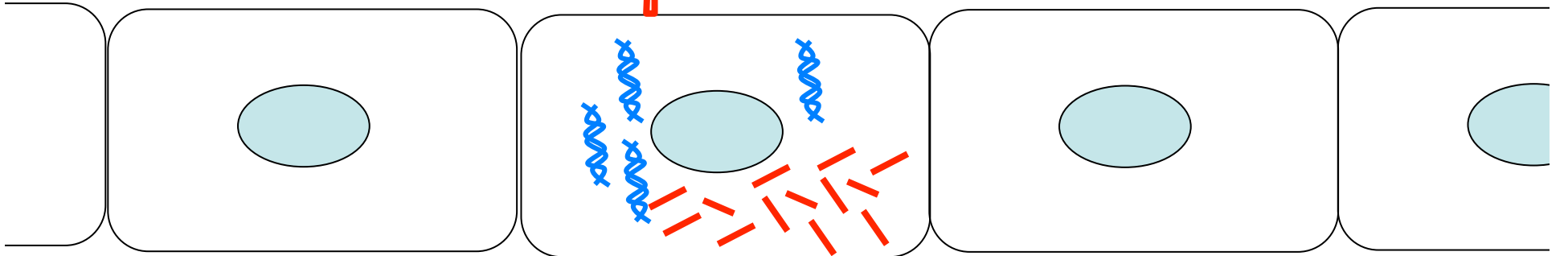
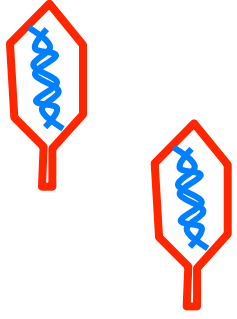


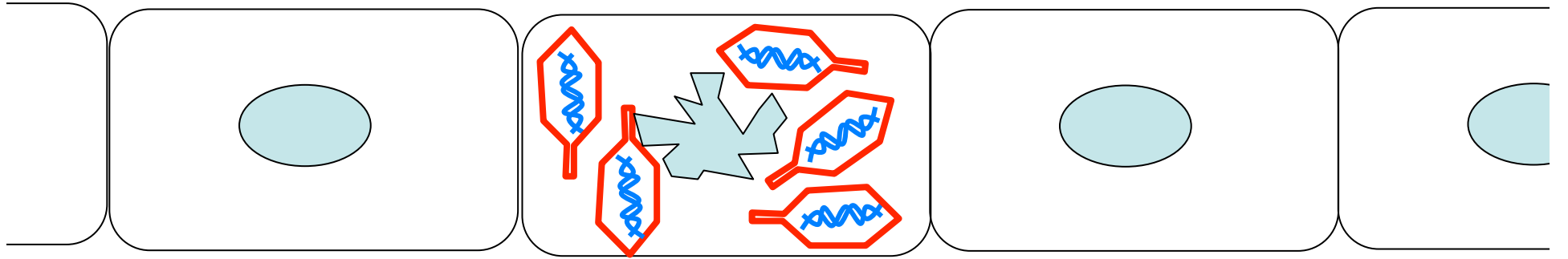
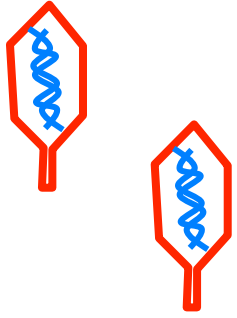


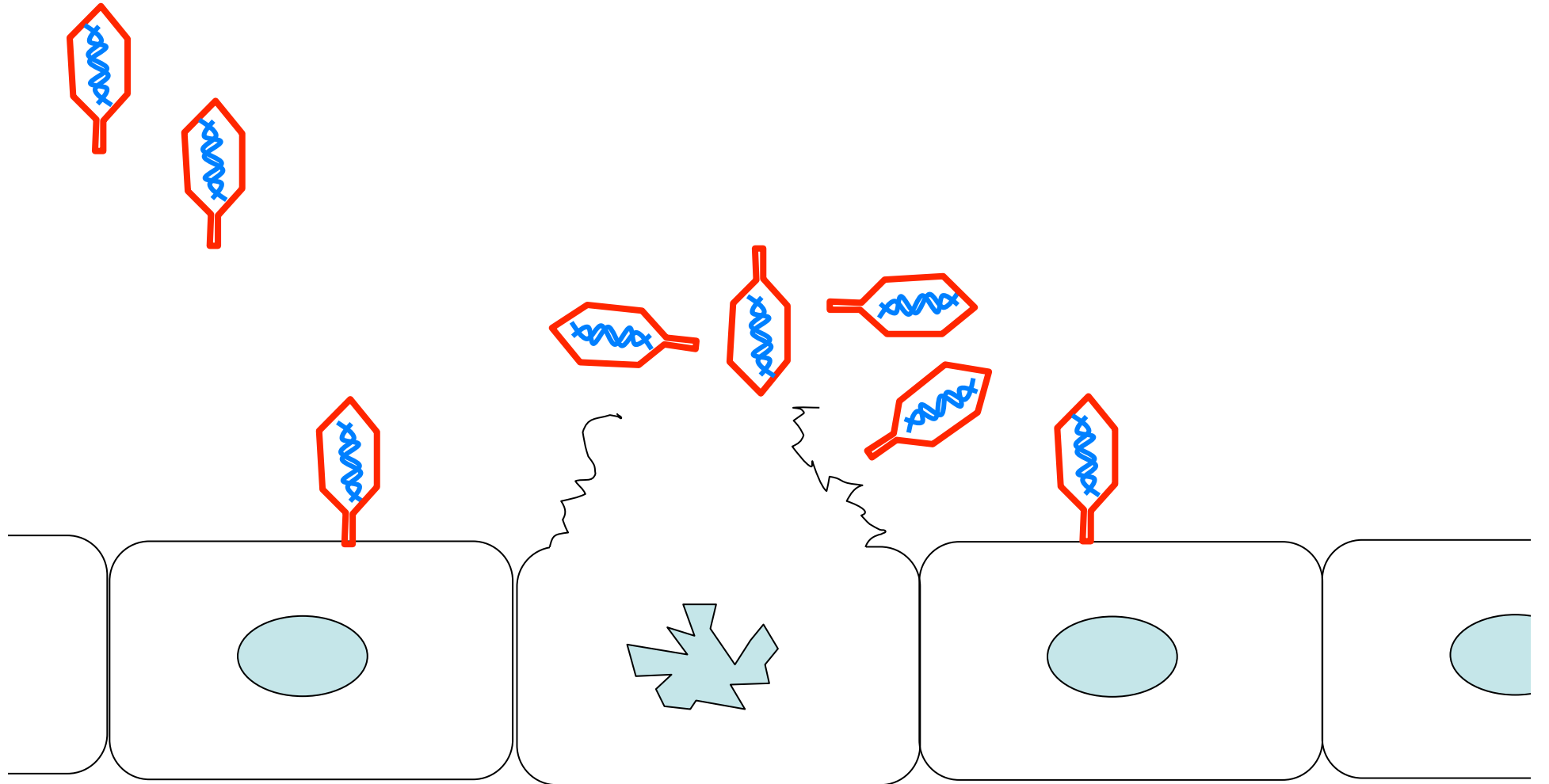




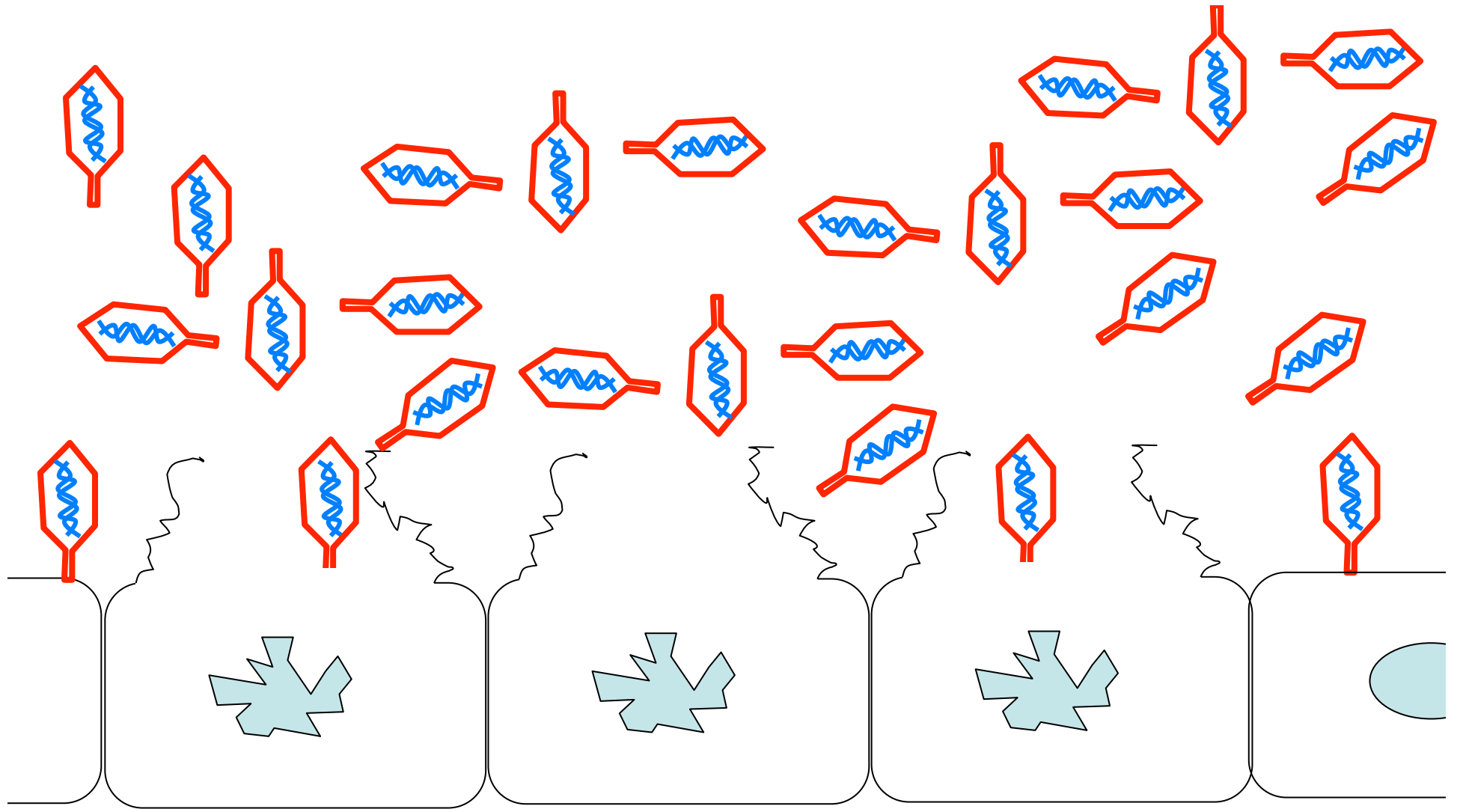














Sneeze demo

NHS

# Coughs and sneezes spread diseases



always carry  
tissues



cover your  
coughs and  
sneezes



throw used  
tissues in  
a bin



always clean  
your hands

## Stop germs spreading

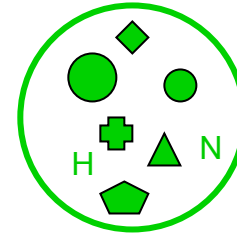
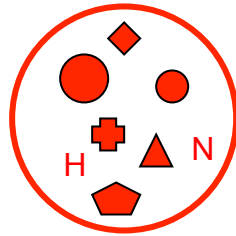
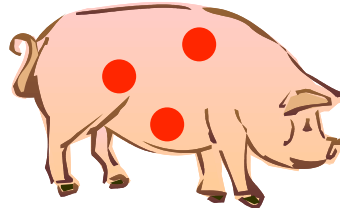
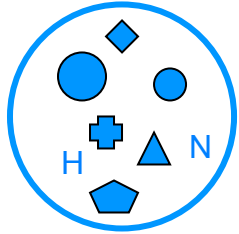
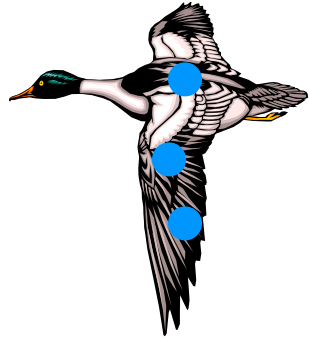




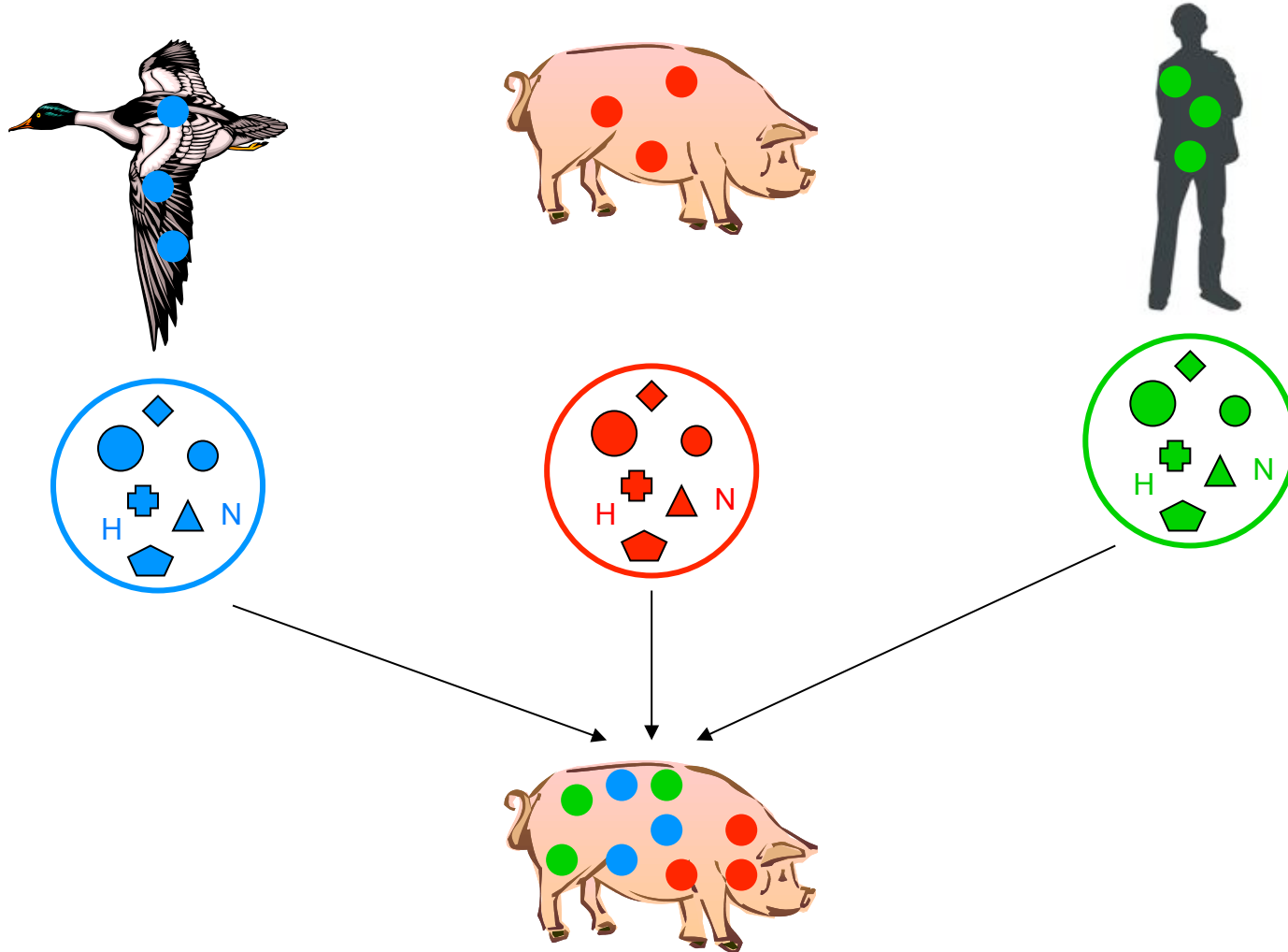




# Reassortment of Influenza

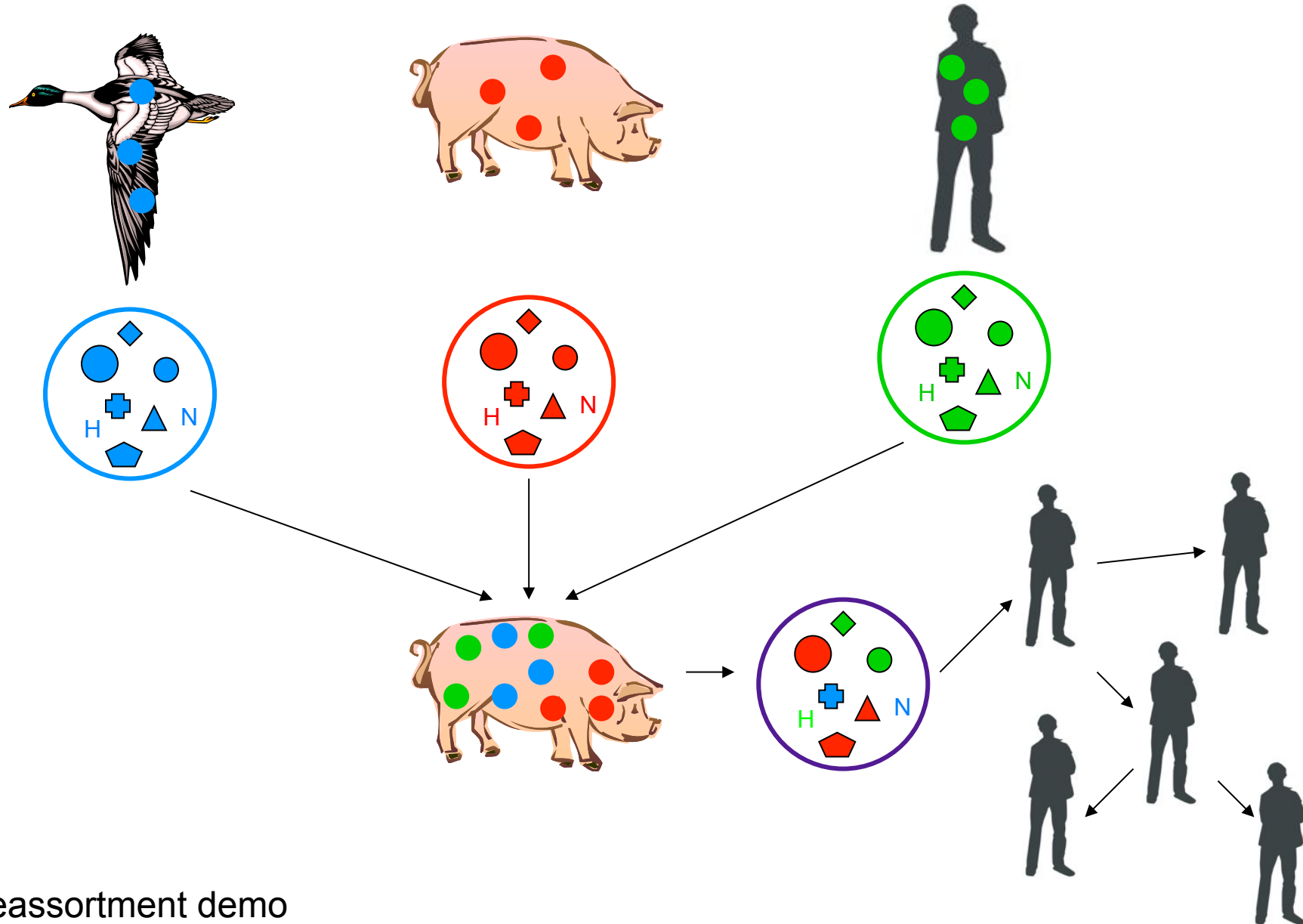


# Reassortment of Influenza





# Reassortment of Influenza



Reassortment demo

THE CIA LEAK CASE: ALL THE VICE PRESIDENT'S MEN

# Newsweek

## The Bird Flu

The Race  
To Prevent  
A Global  
Epidemic

How to  
Protect  
Yourself



22 September 2012 Last updated at 12:01



## New 'Sars-like' not easily transmitted says WHO

A new respiratory illness - from the same family as the Sars virus - appears not to spread easily, experts at the World Health Organization (WHO) say.

A Qatar man, 48, with the virus is being treated in London. The first person known to have had it, in Saudi Arabia, died.

The WHO said on Friday that it appeared the new virus "cannot be easily transmitted from person to person".

The Sars virus, which emerged in China in 2002, killed hundreds of people.

Both Sars (severe acute respiratory syndrome) and the new, so-called virus - as well as the common cold virus - belong to the coronavirus family.

But this new virus is different from any coronaviruses previously identified in humans.

Both of the patients known to have had the virus experienced kidney failure.

### Zoonotic

The WHO said it would continue to monitor the situation but was not recommending any travel restrictions for Saudi Arabia or Qatar.



In both cases to date, the infection was acquired in the Middle East.

### Related Stories

[New 'Sars like' virus identified](#)

[How devastating is the new coronavirus?](#)

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22 September 2012 Last updated at 12:01

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**Zoonotic**

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**Related Stories**

- New 'Sars like' virus identified
- How (re)emerging is the new coronavirus?

**NEWS EUROPE**

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Africa Asia Europe Latin America Middle East US & Canada

12 May 2012 Last updated at 15:41

## WHO says new coronavirus may be passed person to person

The World Health Organization says it appears likely that the novel coronavirus (NCoV) can be passed between people in close contact.

This comes after the French health ministry confirmed a second man had contracted the virus in a possible case of human-to-human transmission.

Two more people in Saudi Arabia are also reported to have died from the virus, according to health officials.



The World Health Organization says it is closely monitoring the novel coronavirus.

NCOV is known to cause pneumonia and sometimes kidney failure.

World Health Organization (WHO) officials have expressed concern over the clusters of cases of the new coronavirus strain and the potential for it to spread.

Since 2012, there have been 34 confirmed cases across Europe and the Middle East, with 18 deaths, according to a recent **WHO update**.

Cases have been detected in Saudi Arabia and Jordan and have spread to Germany, the UK and France.

"Of most concern... is the fact that the different clusters seen in multiple

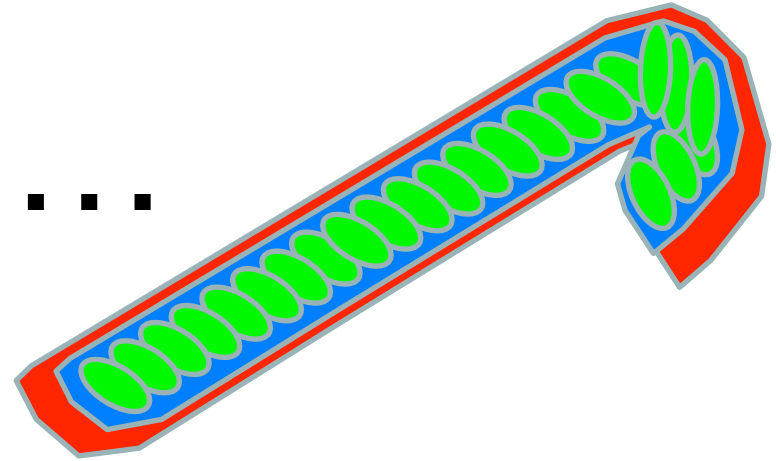
**Related Stories**

- Saudi Sars-like virus 'kills two'
- Sars-like virus death reported in UK
- Q&A: The new coronavirus

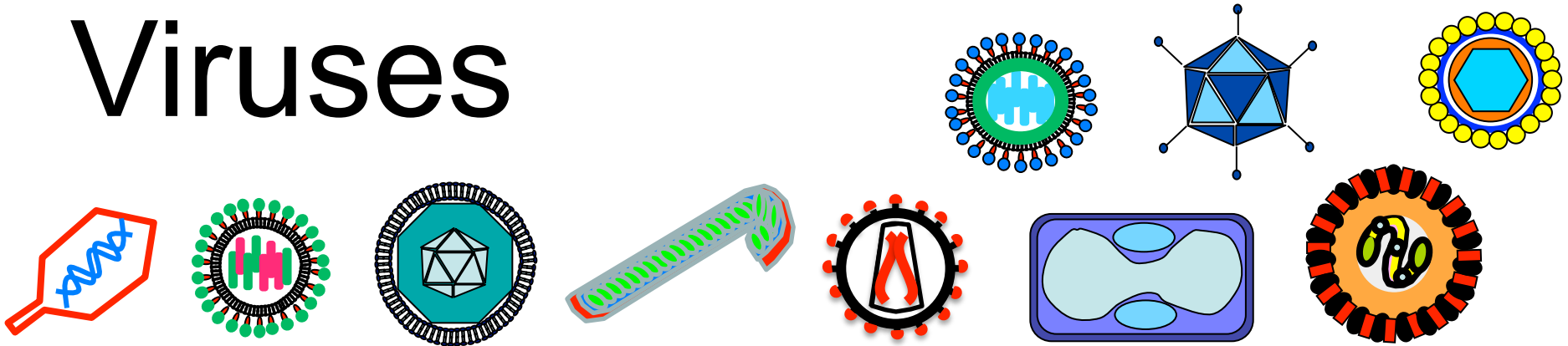
Virus Spread Demo



# Have you had...



# Viruses





**BIOHAZARD**

# Ebola









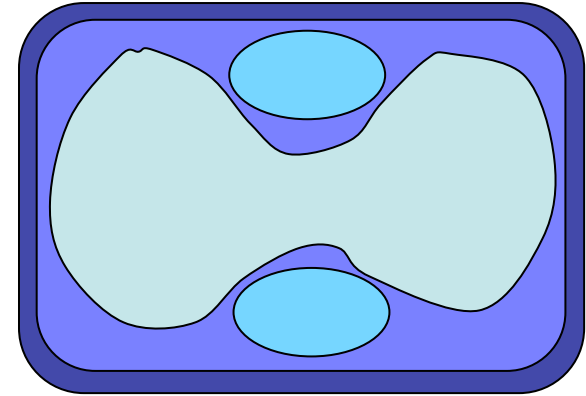




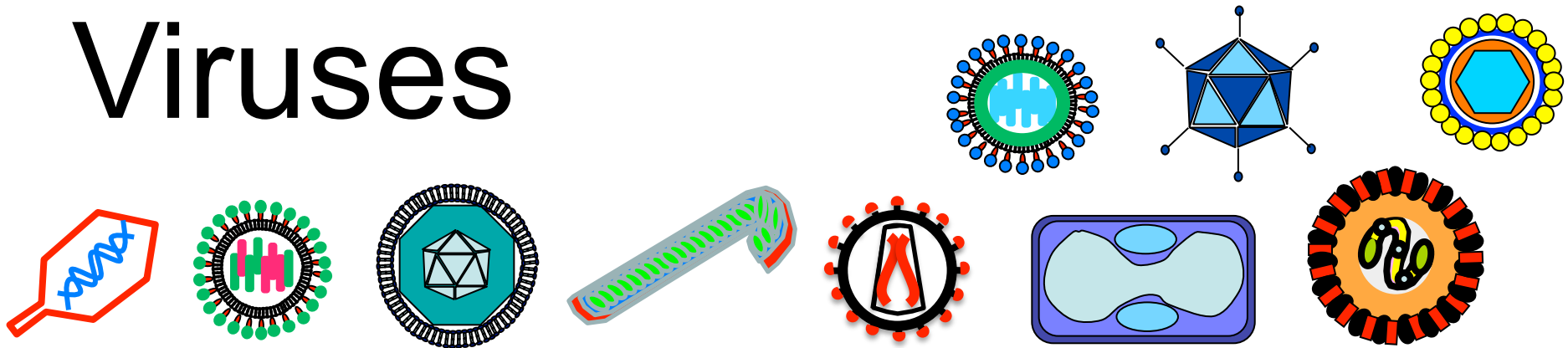
BSL-4



Have you had...



Viruses





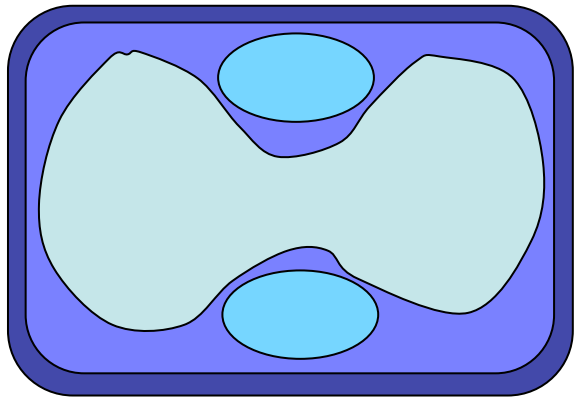
# Small Pox





## Ali Maow Maalim

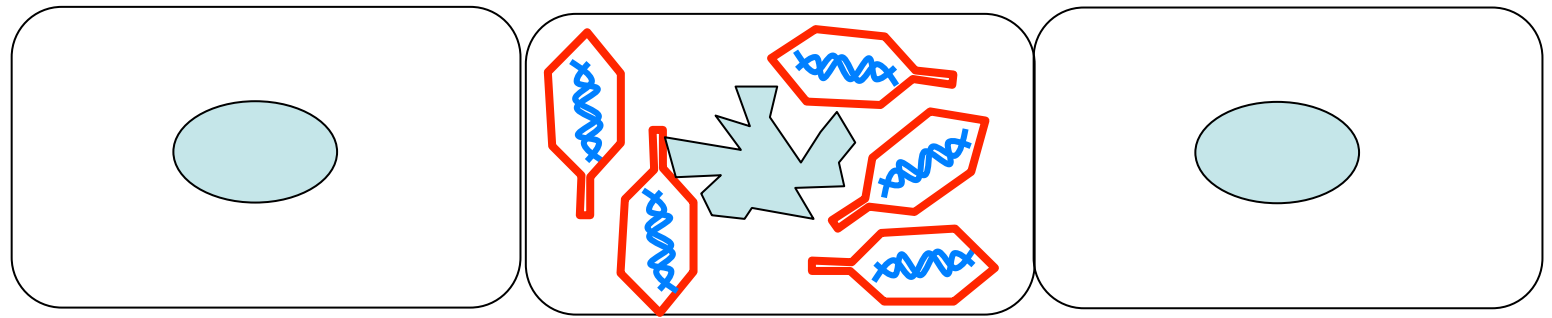
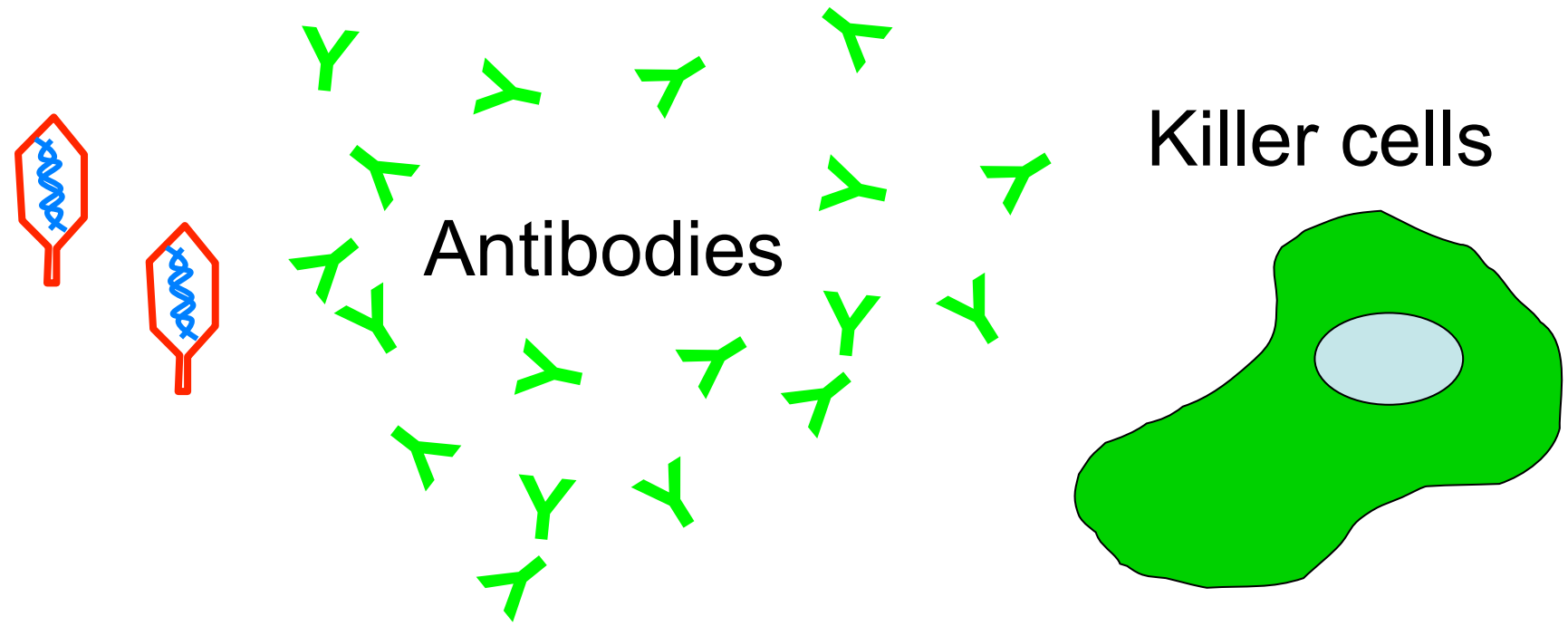
October 1977 the last person on Earth to catch smallpox by natural transmission.

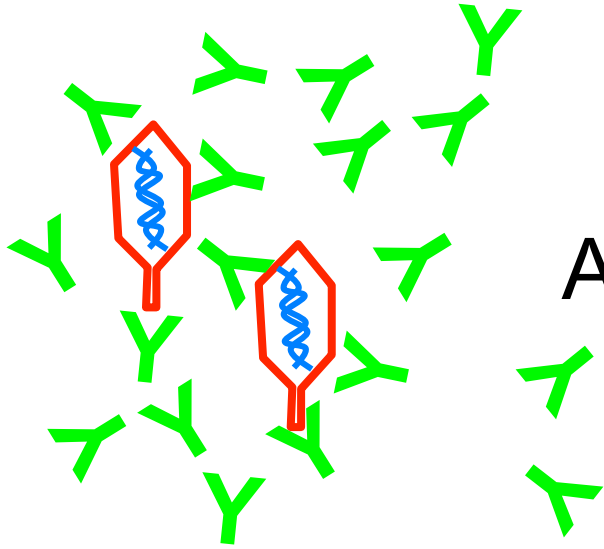


How do we prevent virus diseases?



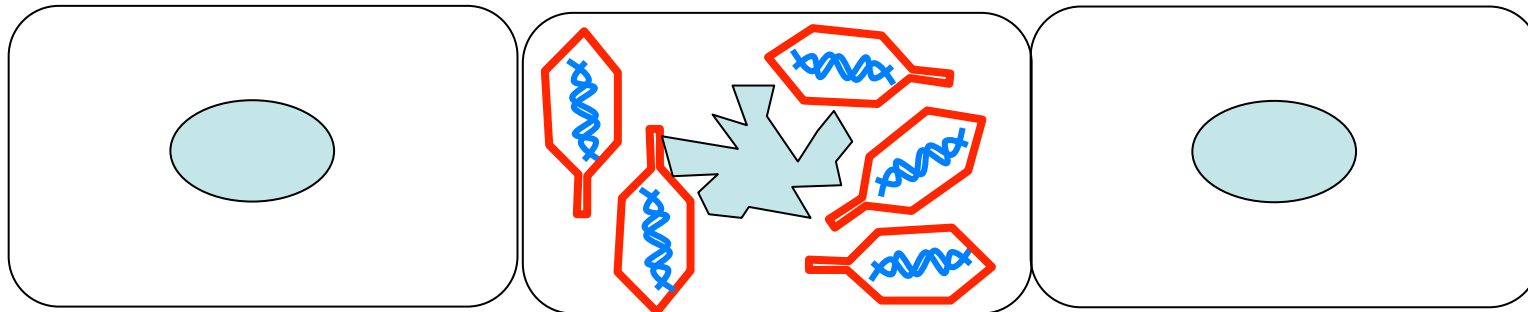
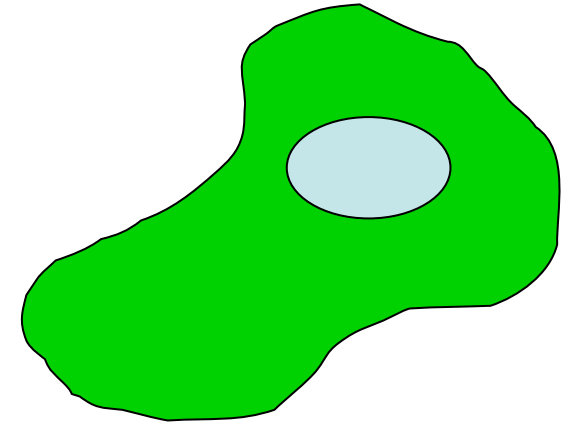


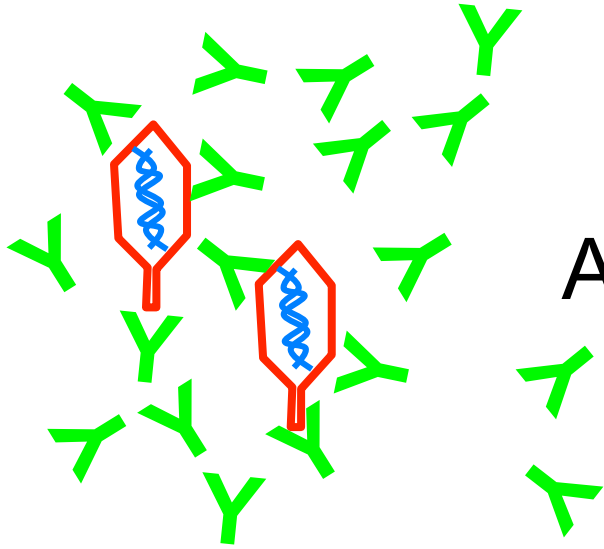




Antibodies

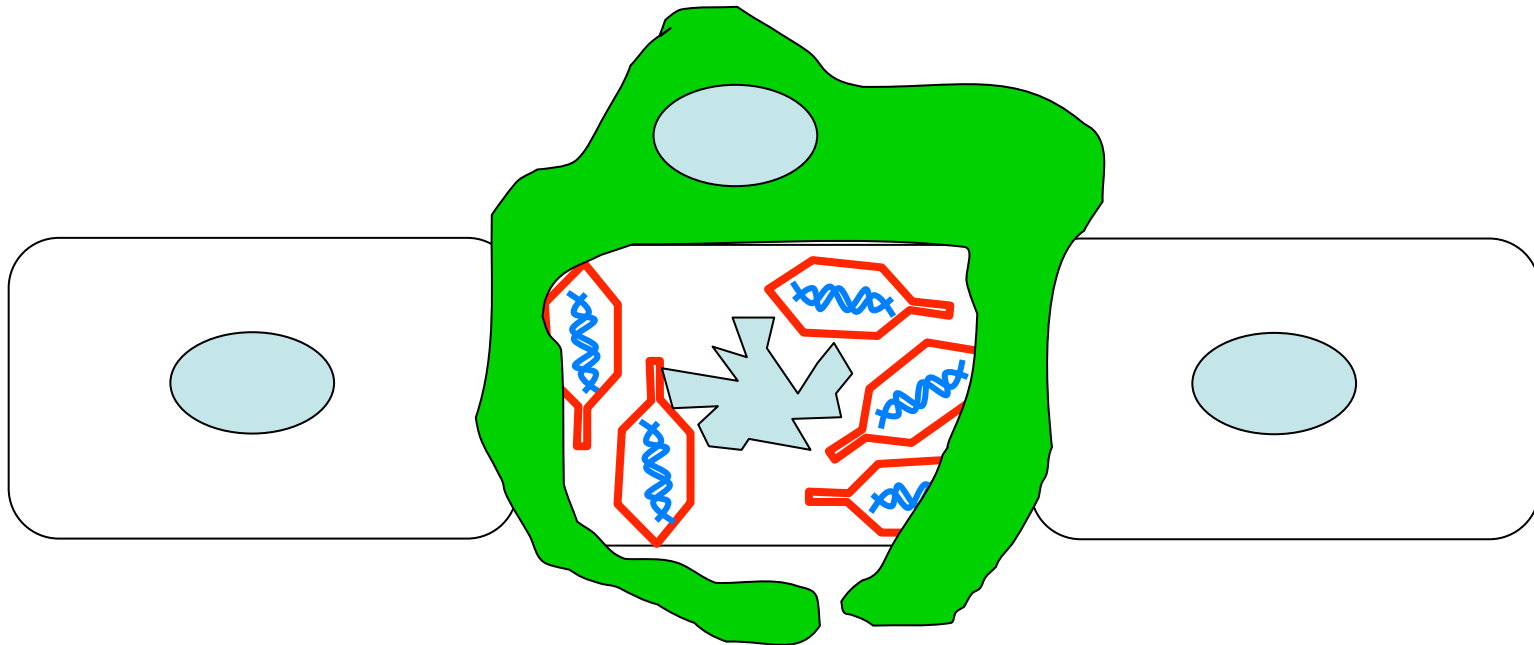
Killer cells





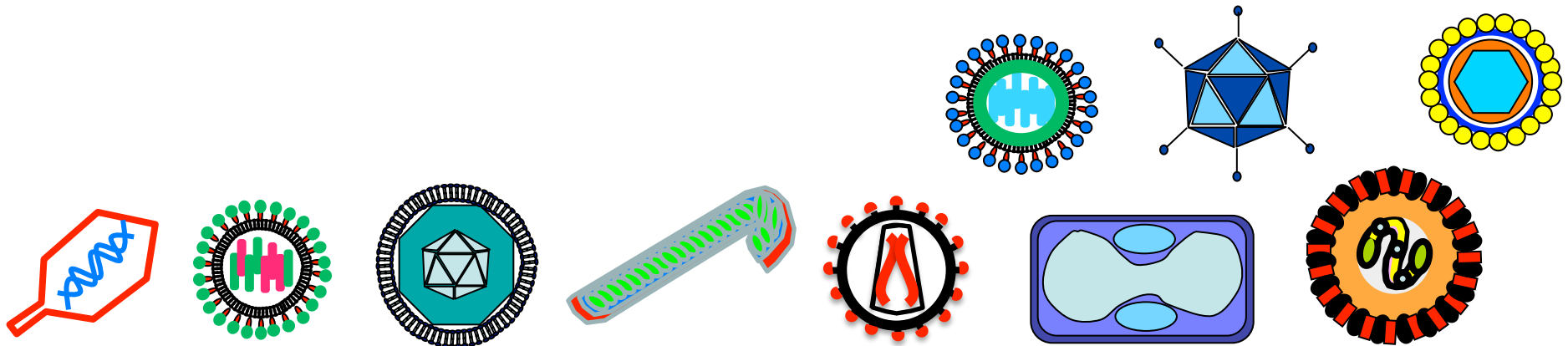
Antibodies

Killer cells

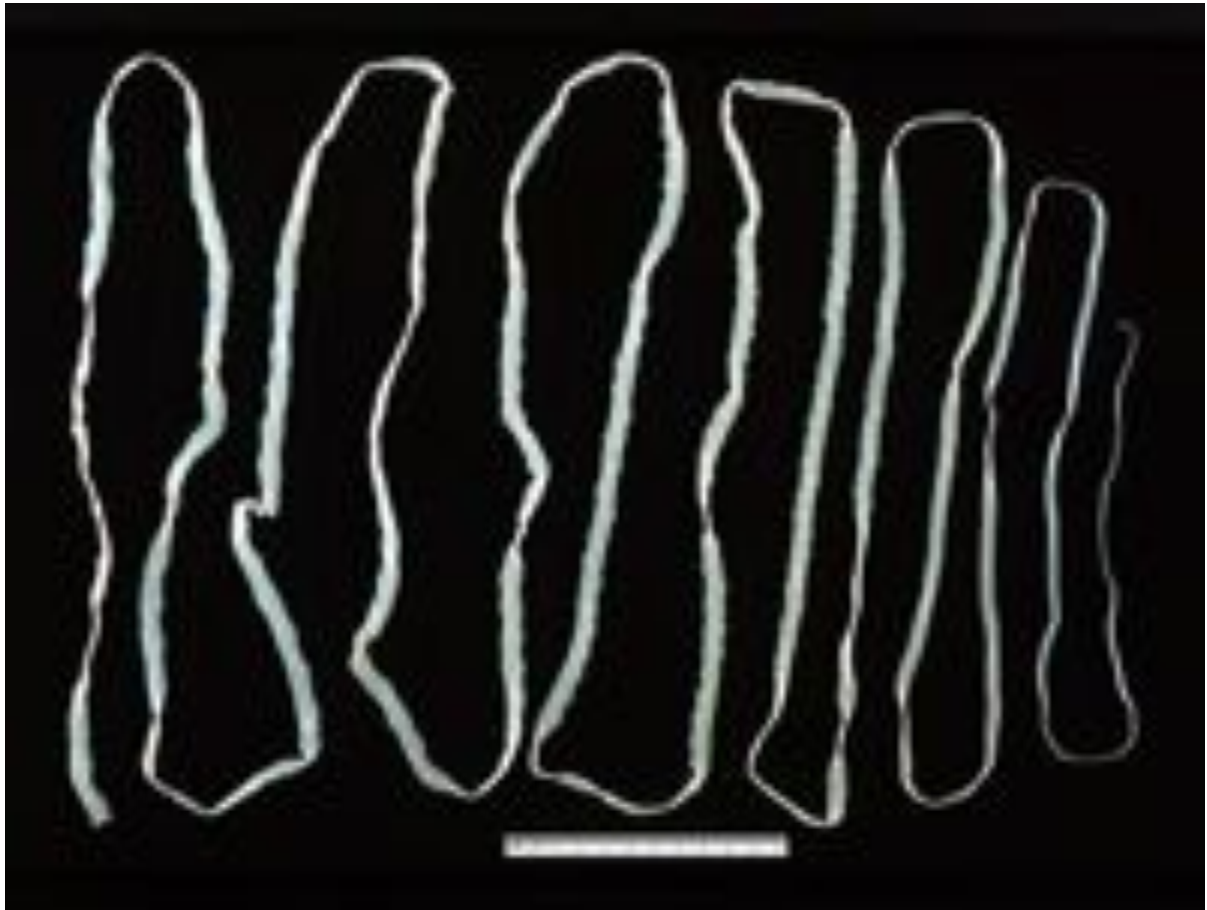


# Viruses are Small

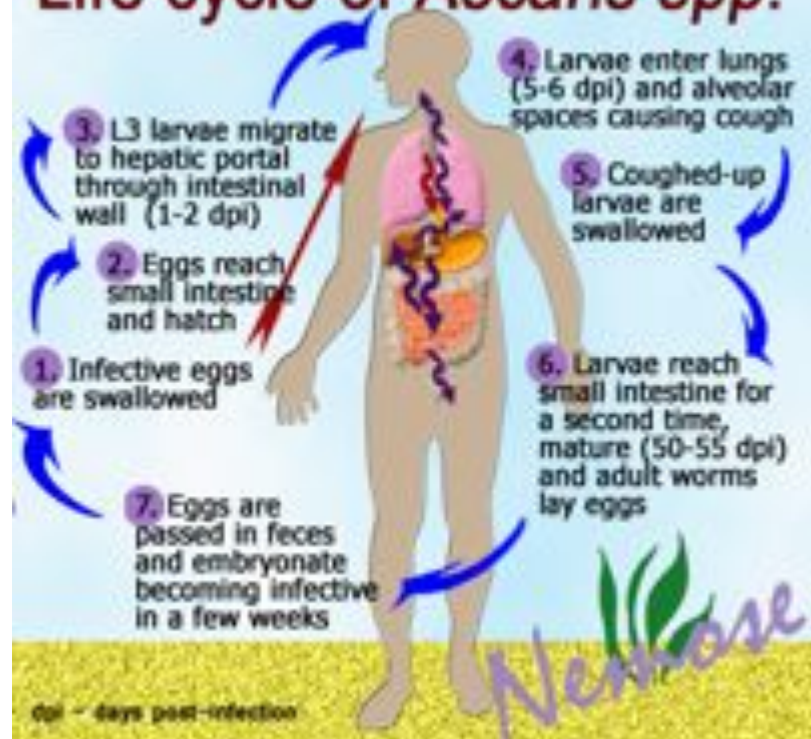
## What about Big Pathogens?







## Life cycle of *Ascaris* spp.



# Thanks for coming

## Any questions? Ask us now or visit our stand

