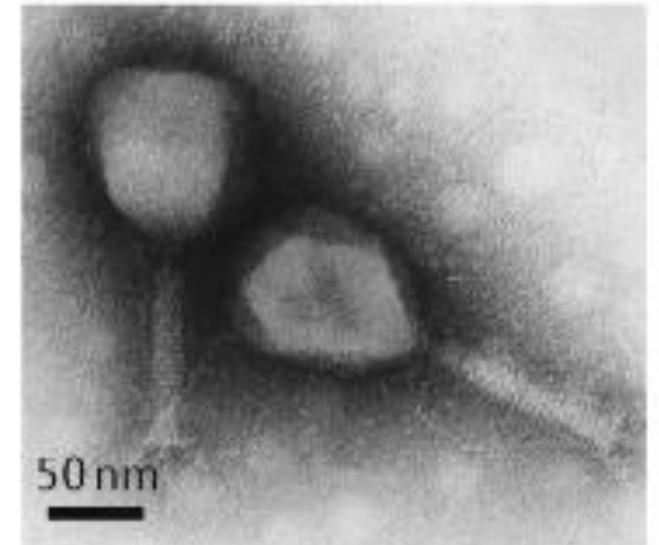
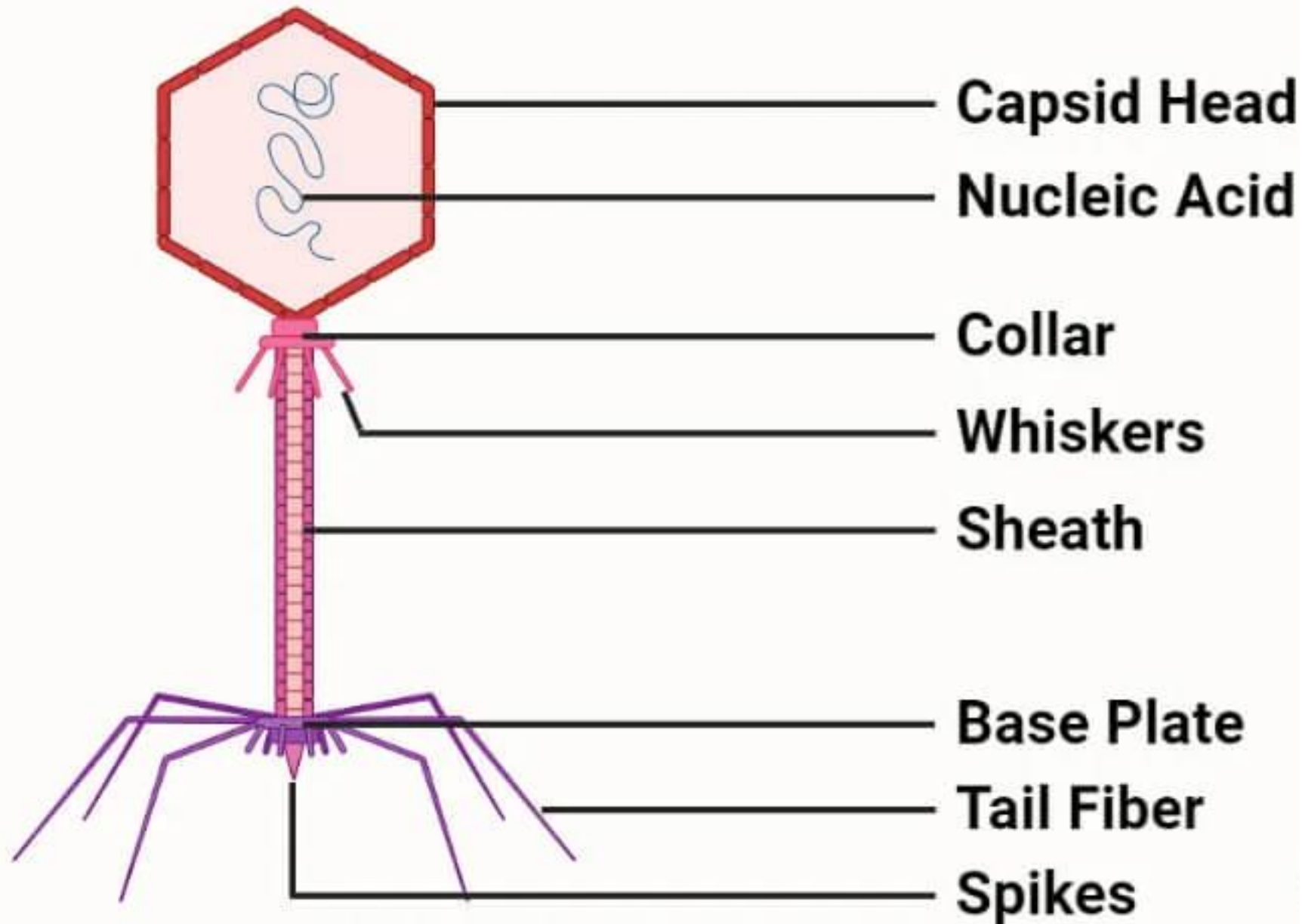


The actual experiment bacterial phage infection

GENOMICS
04/10/2023
AMAURY BIGNAUD

What is a phage ?

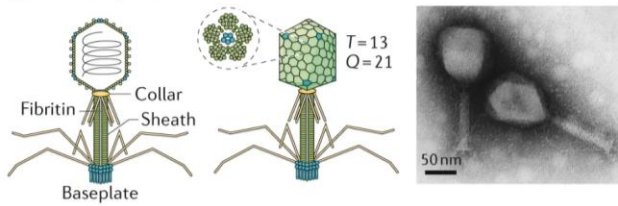


What is a phage ?

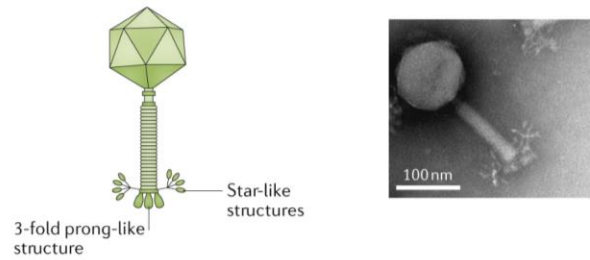
b dsDNA

Tailed

Myoviridae (T4) and Herelleviridae

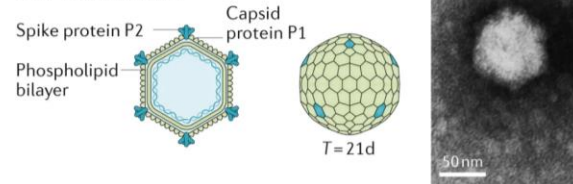


Ackermannviridae (AG3)

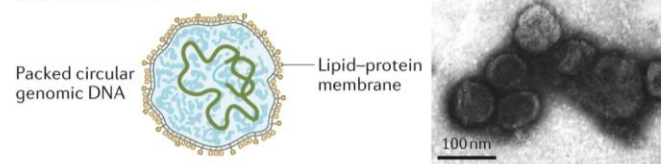


Non-tailed

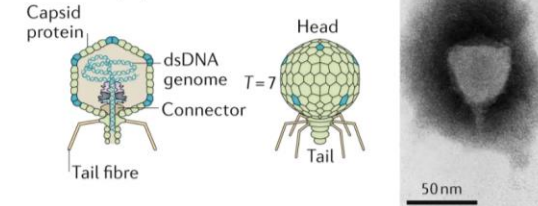
Corticoviridae (PM2)



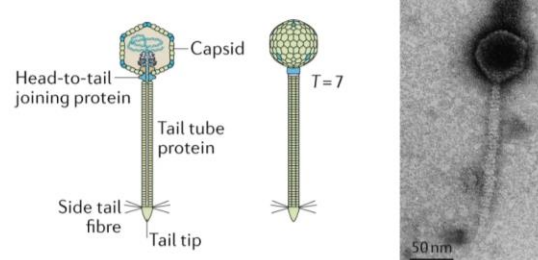
Plasmaviridae (MVL2)



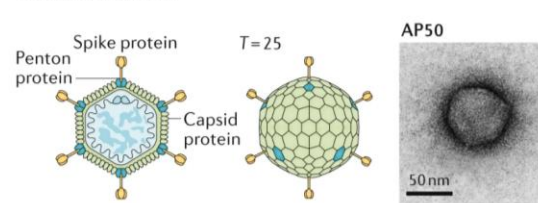
Podoviridae (T7)



Siphoviridae (lambda)

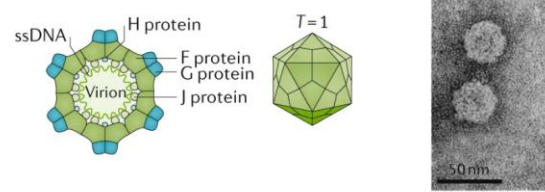


Tectiviridae (PRD1)

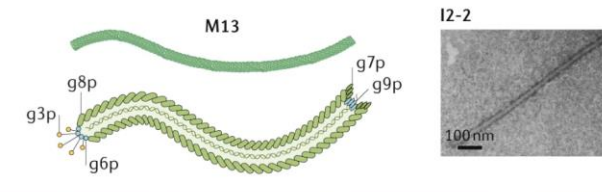


a ssDNA

Microviridae (phiX174)

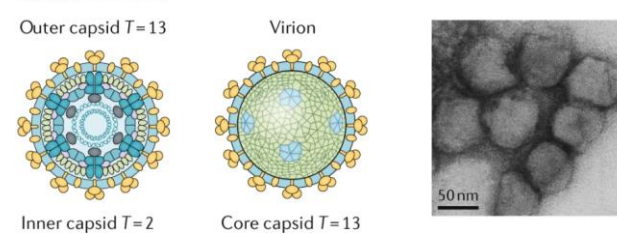


Inoviridae



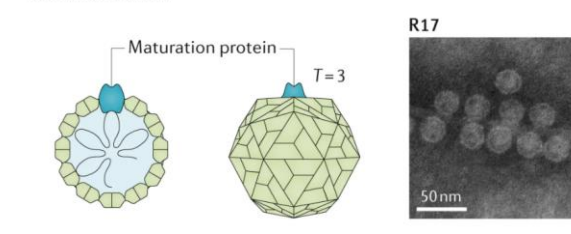
c dsRNA

Cystoviridae (phi6)



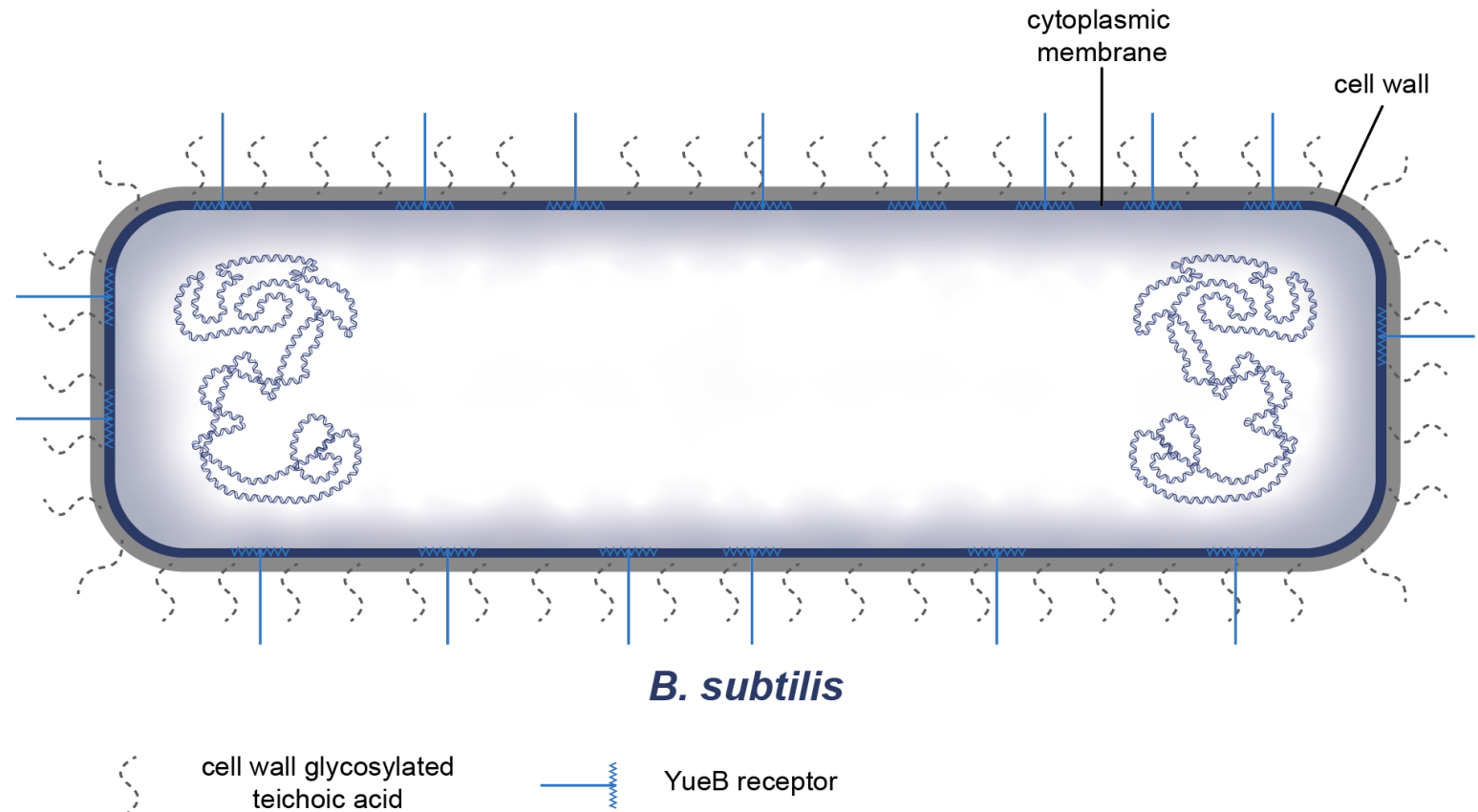
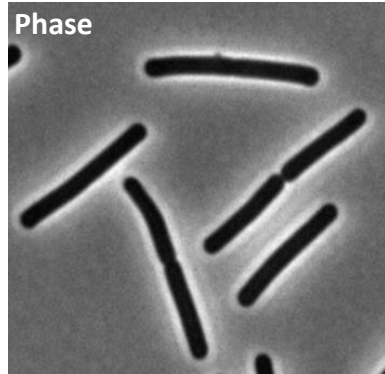
d ssRNA

Leviviridae (MS2)



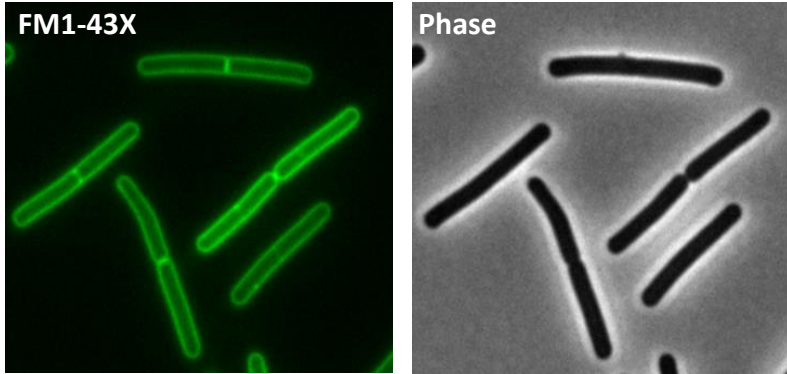
Bacillus subtilis infection by SPP1 phage

Host: *Bacillus subtilis* (Gram+ bacterium)

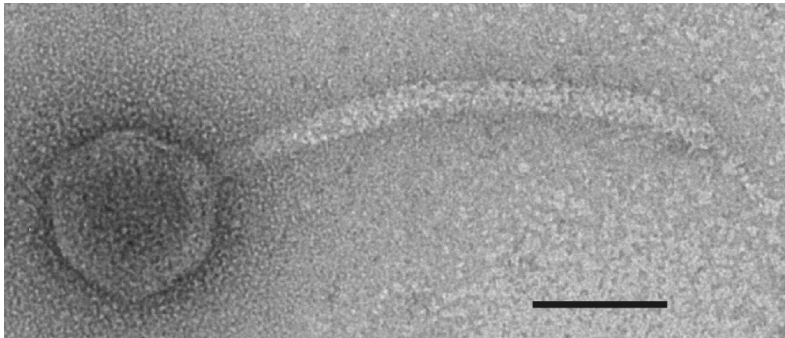


Bacillus subtilis infection by SPP1 phage

Host: *Bacillus subtilis* (Gram+ bacterium)

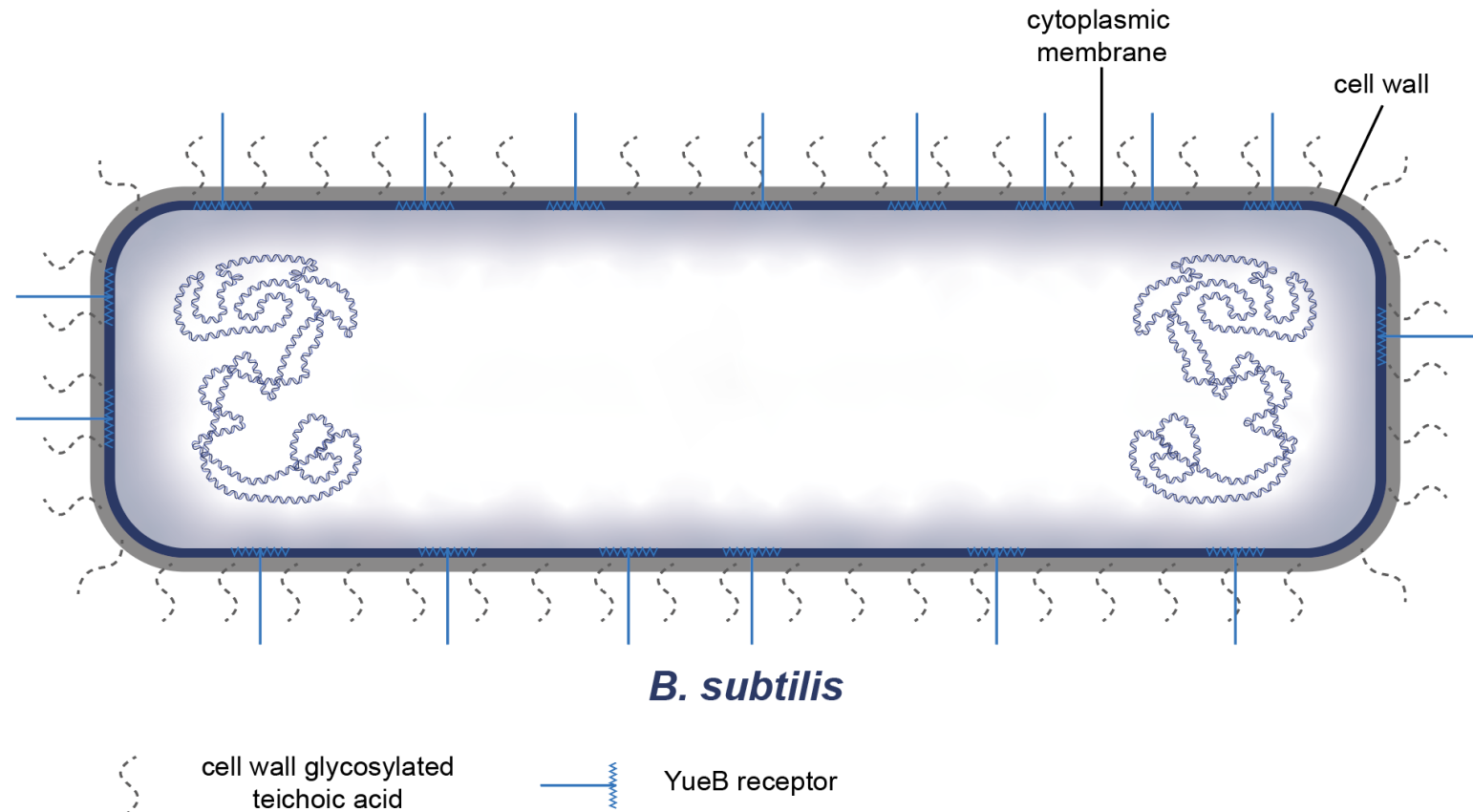


Virus : bacteriophage SPP1



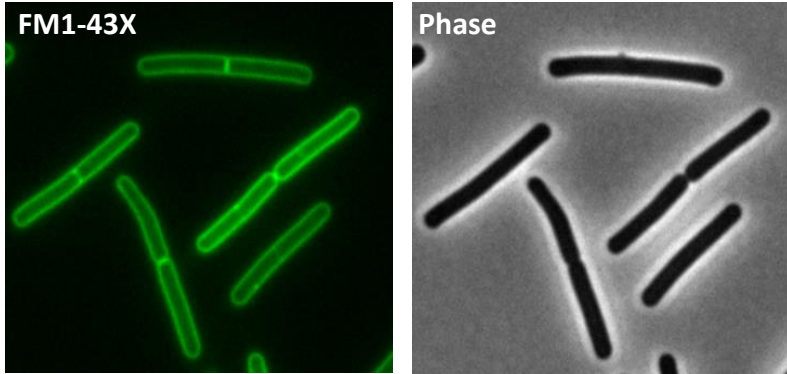
Phylum: *Caudoviricetes*

Morphotype: *Siphovirus*

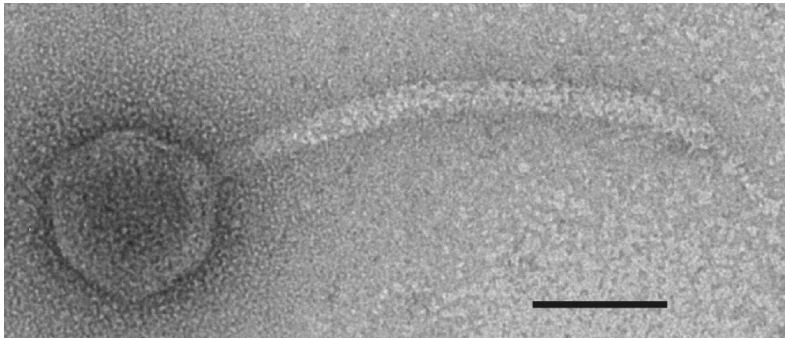


Bacillus subtilis infection by SPP1 phage

Host: *Bacillus subtilis* (Gram+ bacterium)



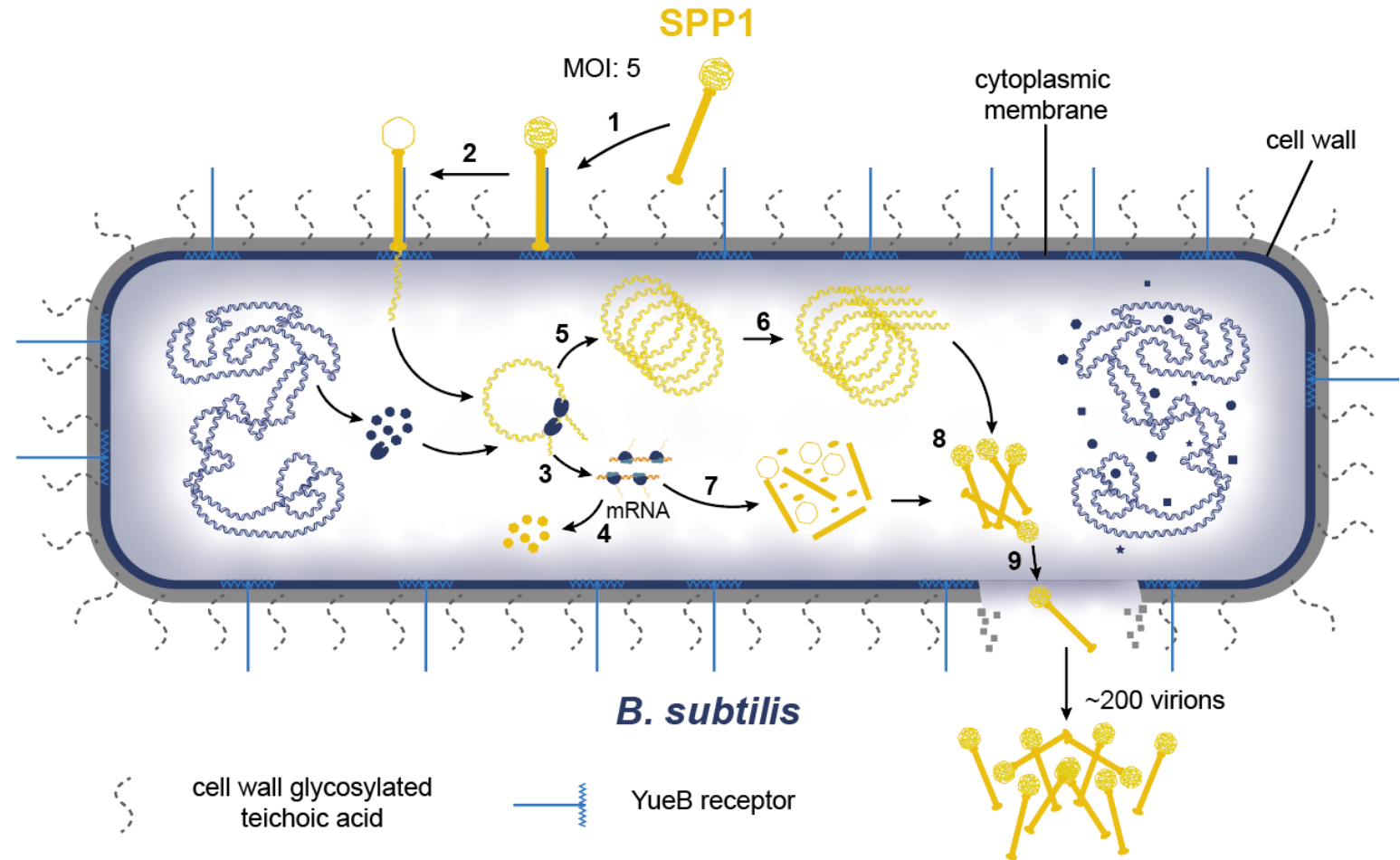
Virus : bacteriophage SPP1



Phylum: *Caudoviricetes*

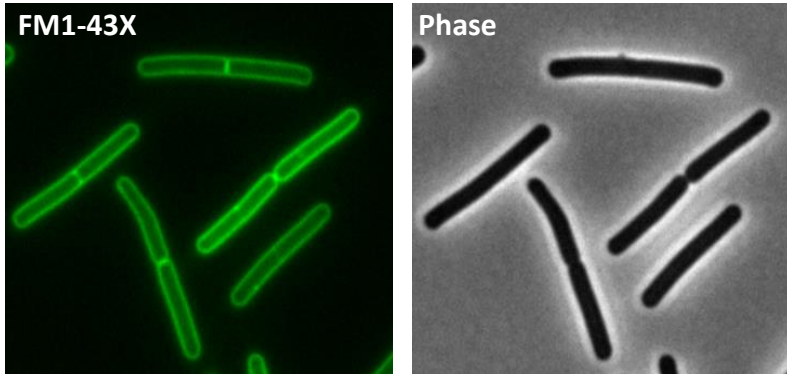
Morphotype: *Siphovirus*

- | | | |
|------------------------|----------------------------|---------------------------------|
| 1. cell recognition | 4. early protein synthesis | 7. structural protein synthesis |
| 2. cell entry | 5. theta replication | 8. virion assembly |
| 3. viral transcription | 6. sigma replication | 9. bacterial lysis |

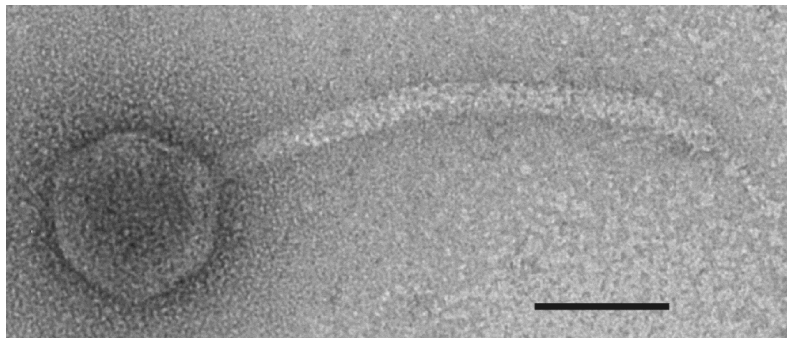


Bacillus subtilis infection by SPP1 phage

Host: *Bacillus subtilis* (Gram+ bacterium)



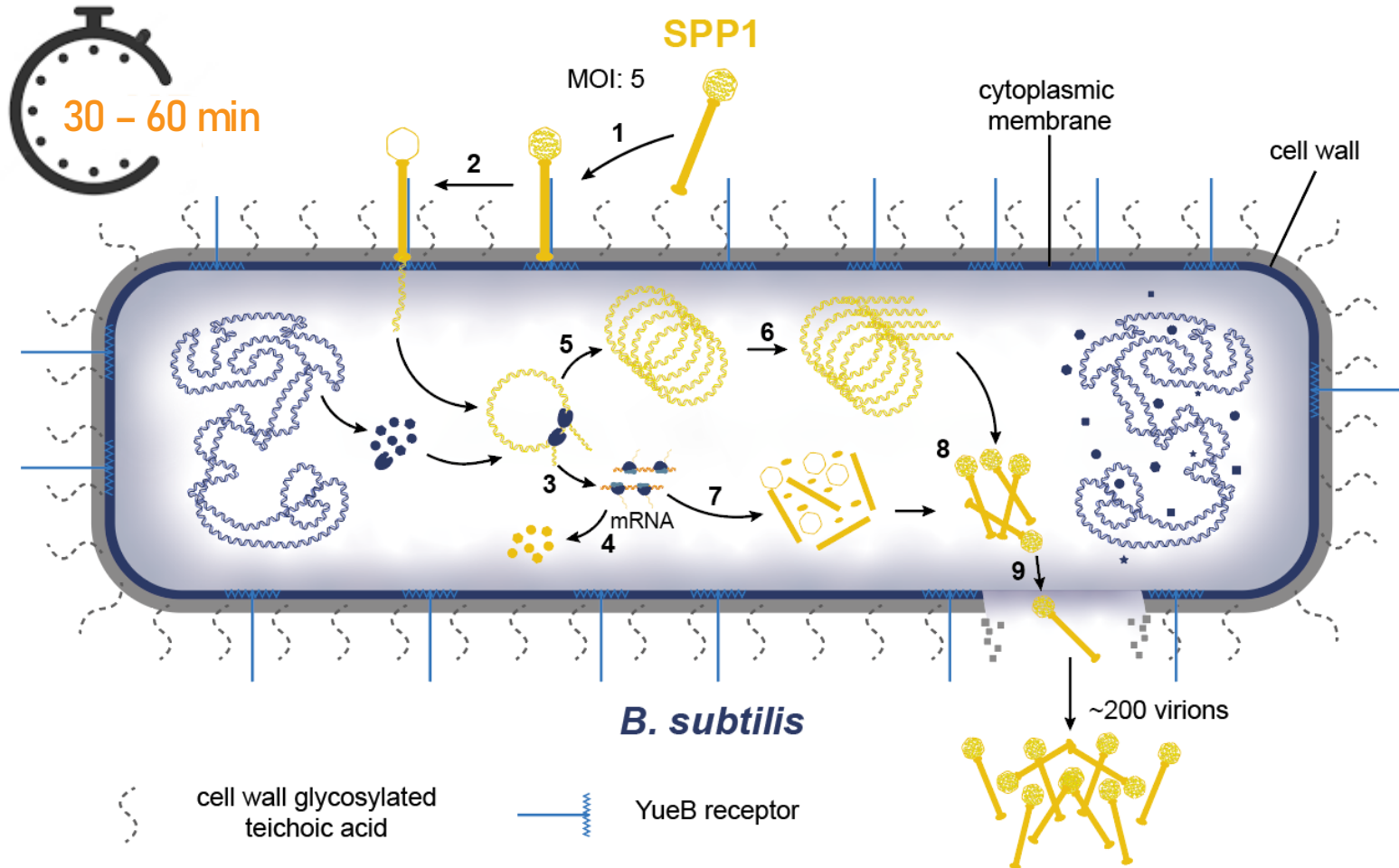
Virus : bacteriophage SPP1



Phylum: *Caudoviricetes*

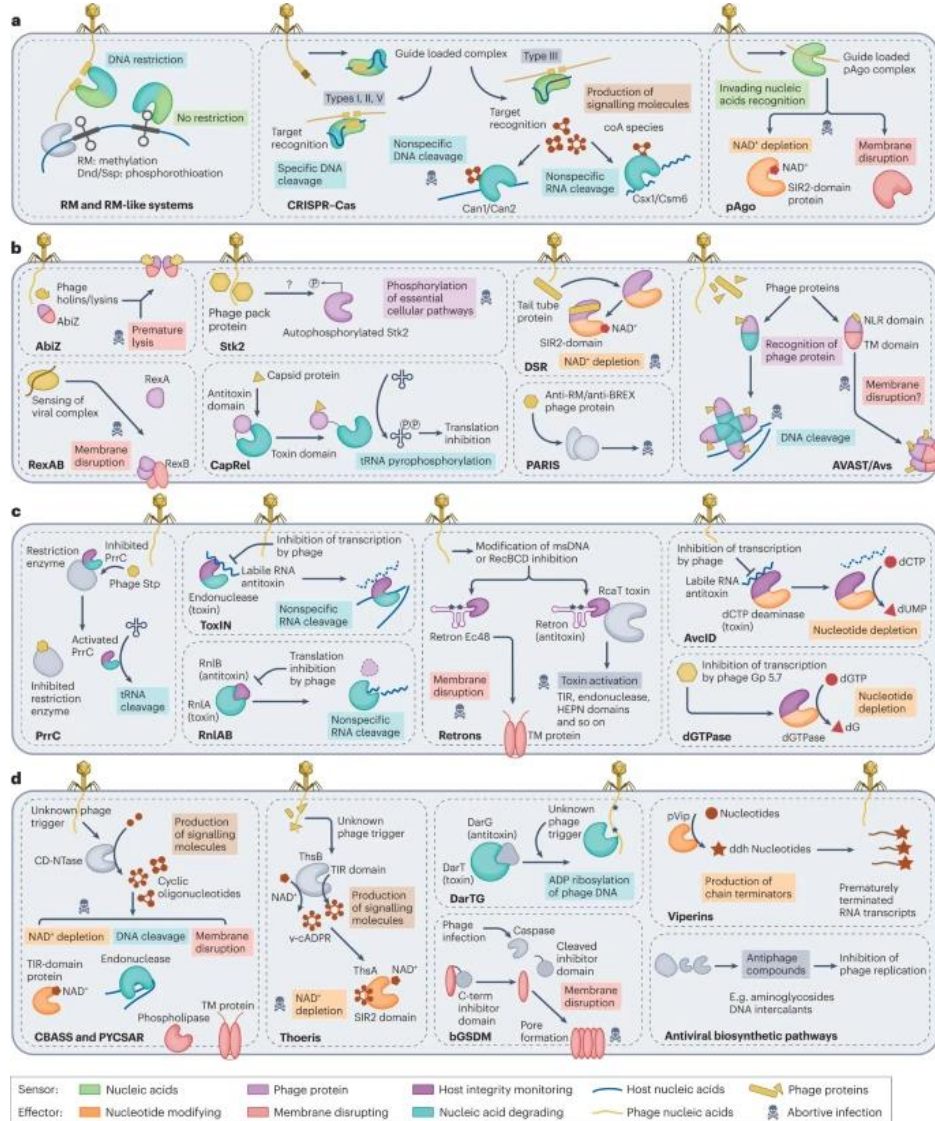
Morphotype: *Siphovirus*

1. cell recognition
2. cell entry
3. viral transcription
4. early protein synthesis
5. theta replication
6. sigma replication
7. structural protein synthesis
8. virion assembly
9. bacterial lysis

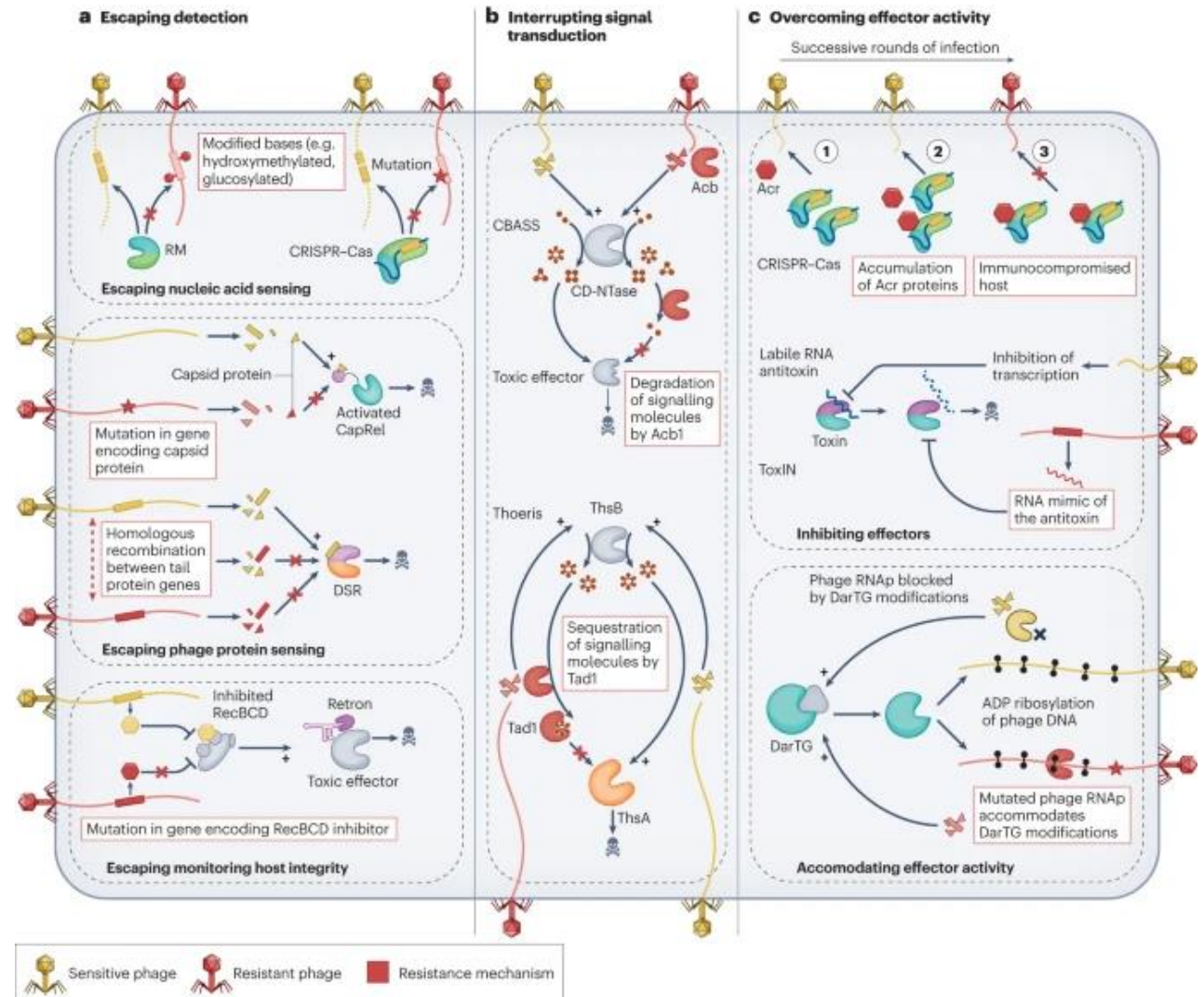


Defense mechanism

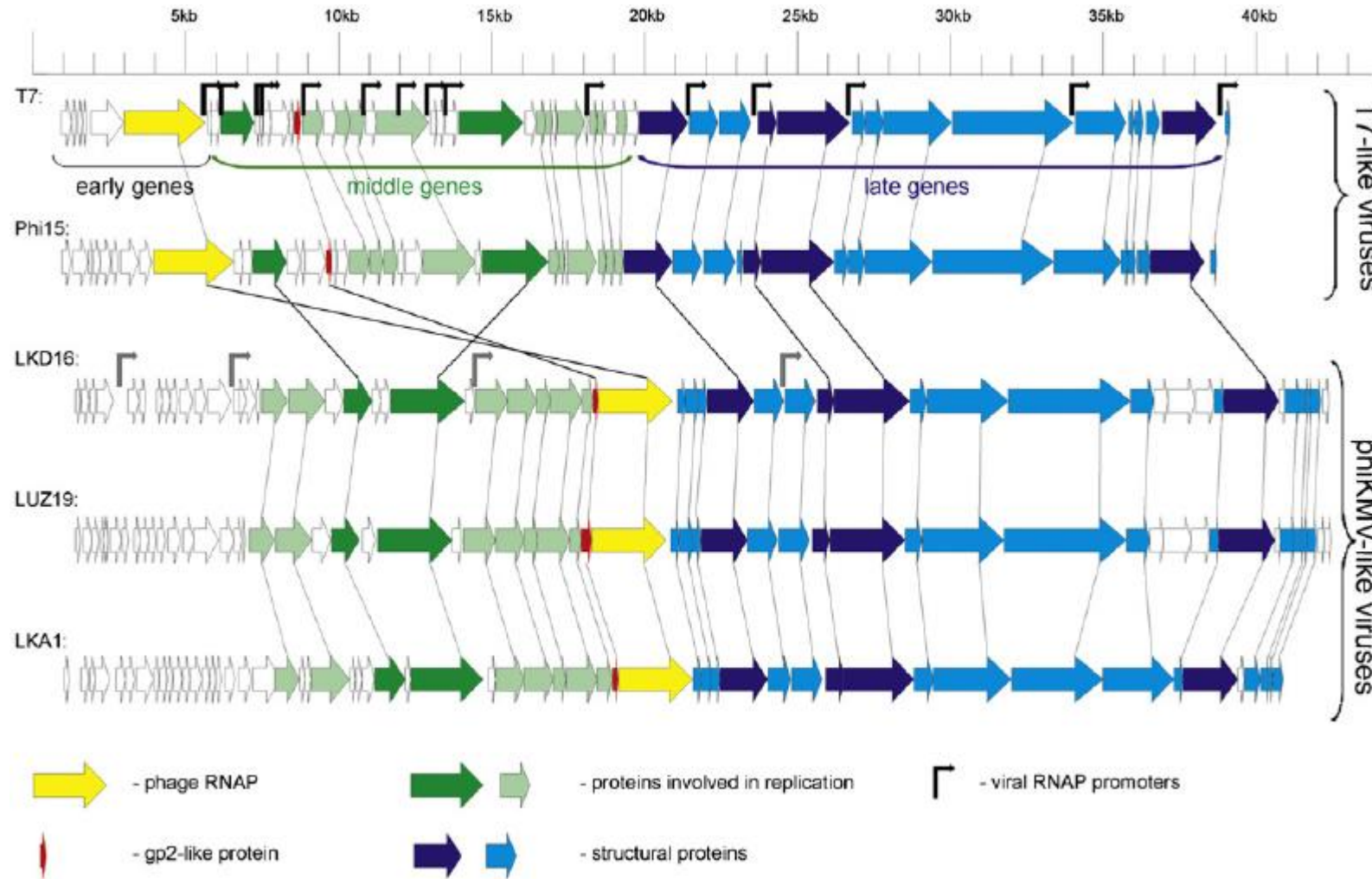
Bacterial defense system



Phage systems to avoid the defense



Temporal regulation of genes



Early genes:

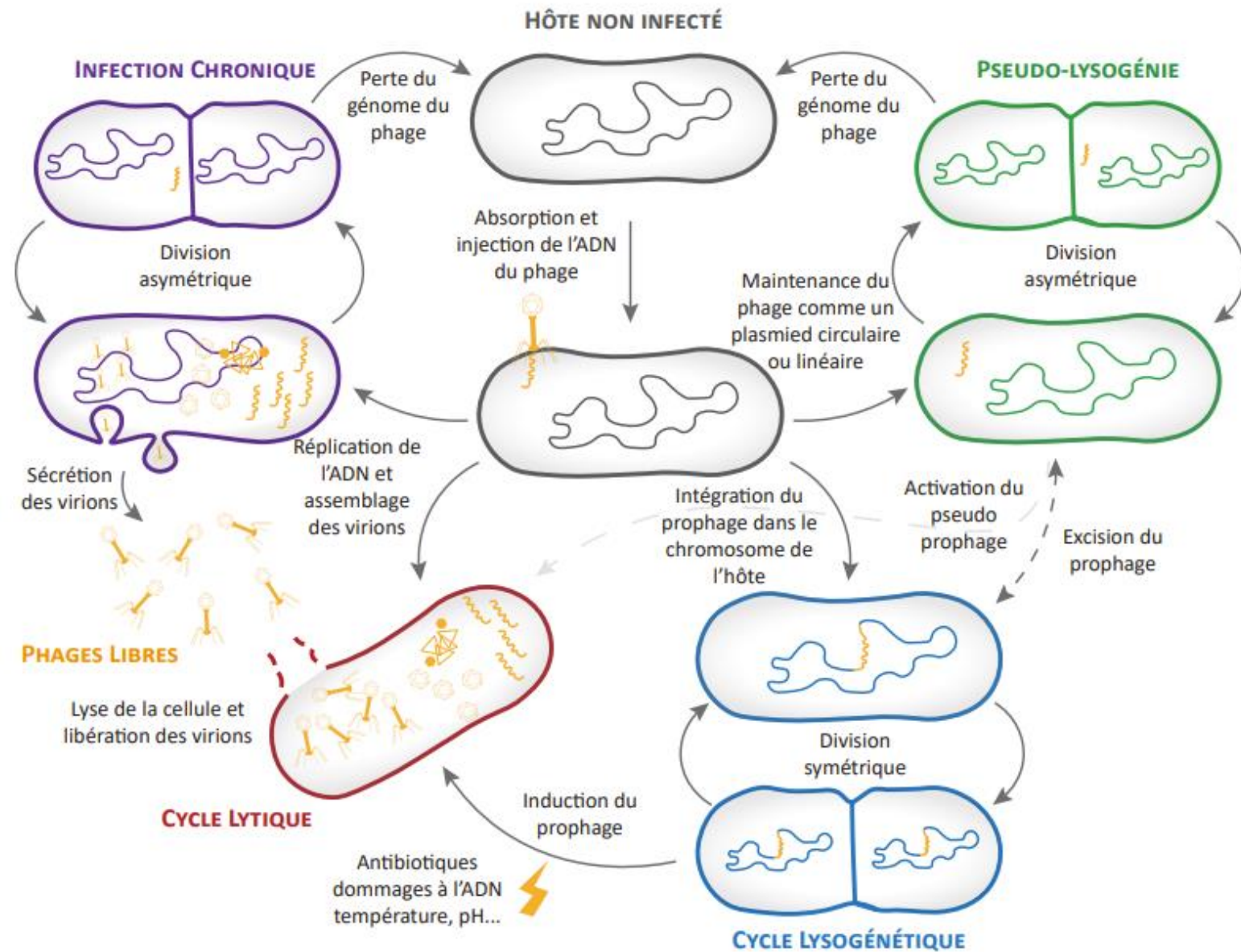
- Host takeover
- Transcription machinery of the phage
- Defense mechanism of the phage

Middle genes:

- Replication machinery

Late genes:

- Structural proteins
- Lytic genes



Time points collected



Sample	Time (min)	Replicates
MM227	0	1
MM228	5	1
MM229	10	1
MM230	25	1
MM231	0	2
MM232	5	2
MM233	10	2
MM234	25	2
MM235	0	3
MM236	5	3
MM237	10	3
MM238	25	3

