Sapphire 60445 bacterial contaminant

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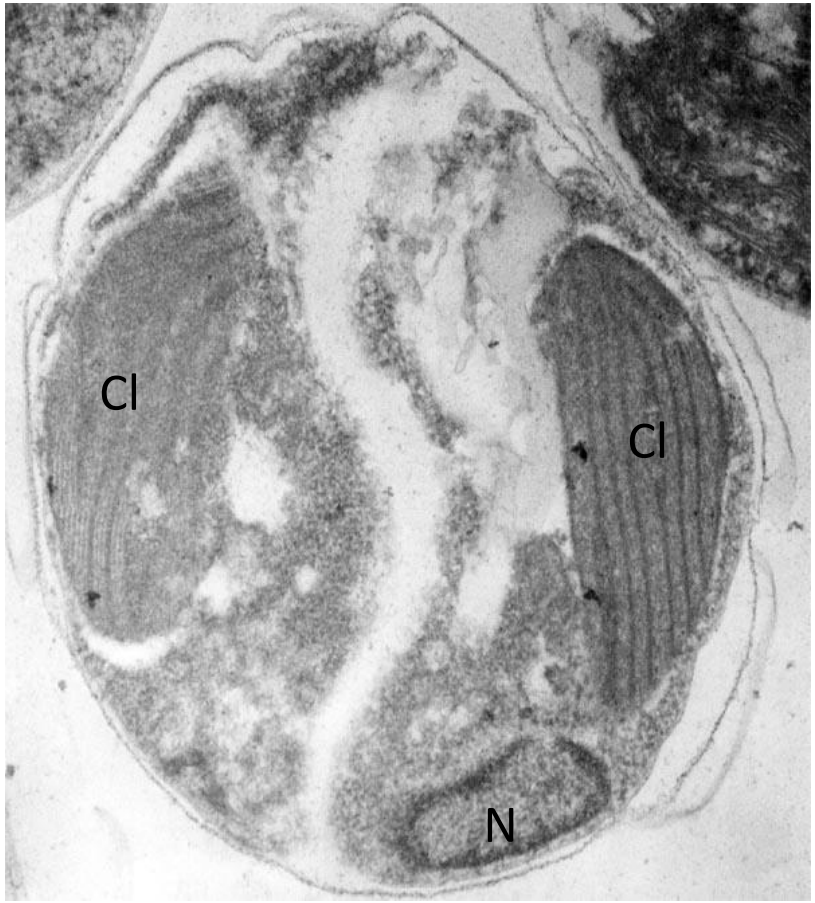
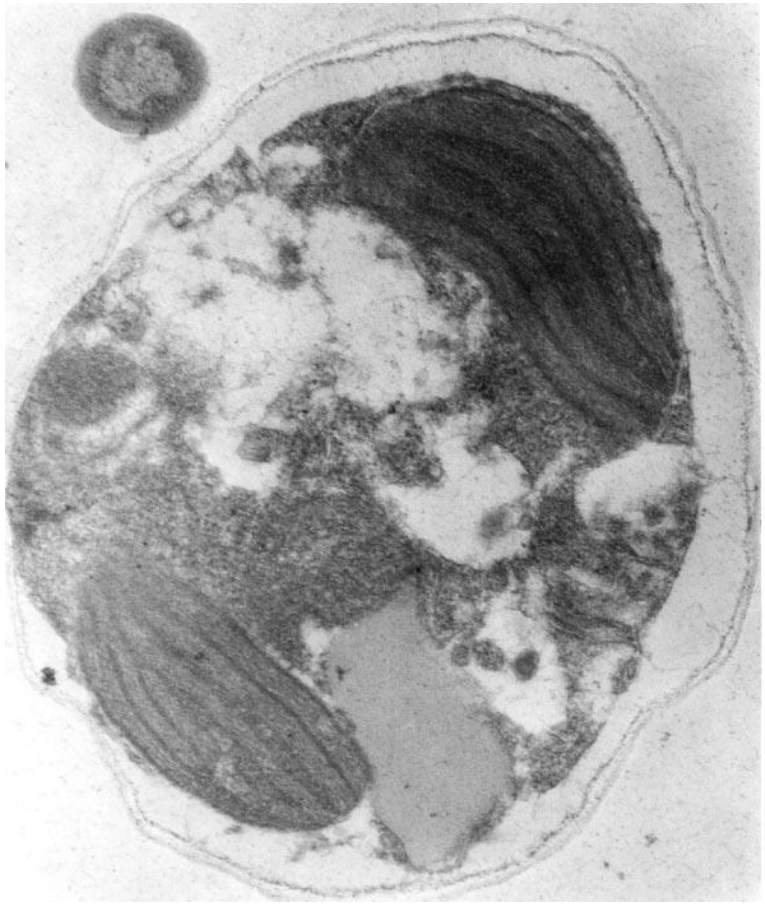
Summary:

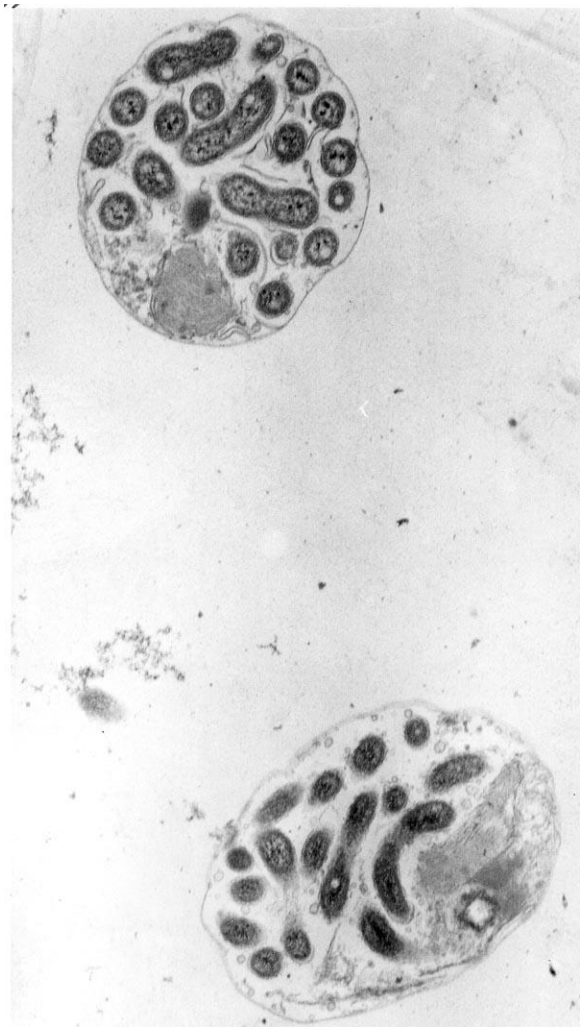
- Samples received from Days 1, 3, and 4 of infection
- Day 1: abundance of healthy algal cells, no sign of infection
- Day 3: Abundant infection, bacteria both inside and outside infected cells; bacterial mostly rod-shaped, some hook-shaped, division by binary fission
- Day 4: host cells fully degraded, often cell wall broken down; a protist component also present, but in low numbers.

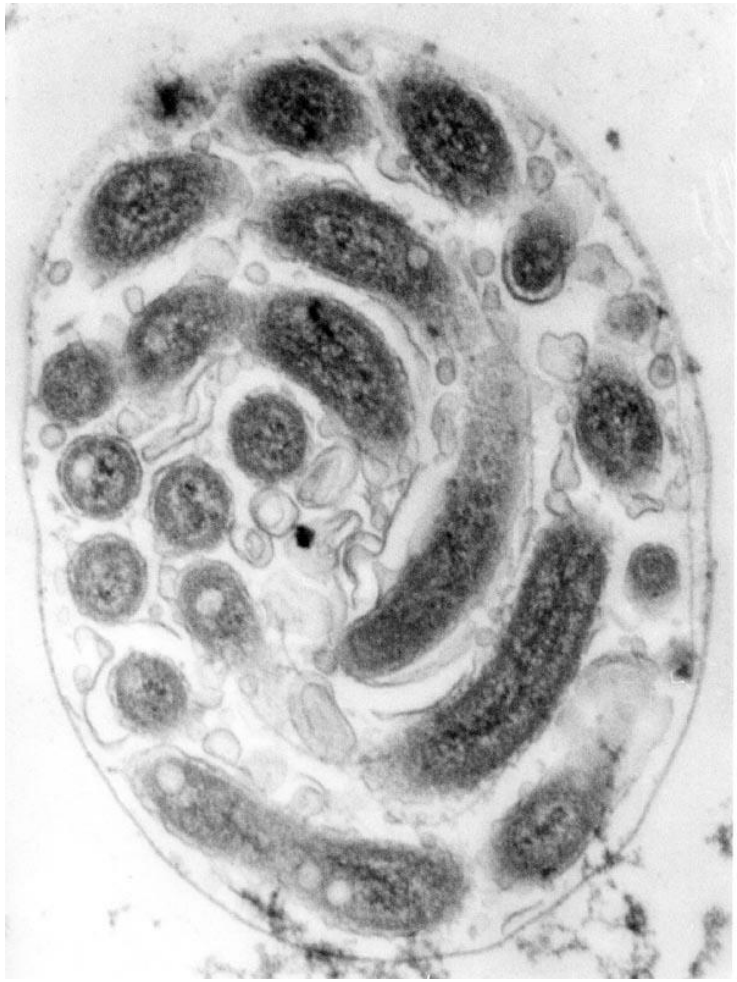
Day 1: healthy algal cells: notice chloroplasts and nucleus



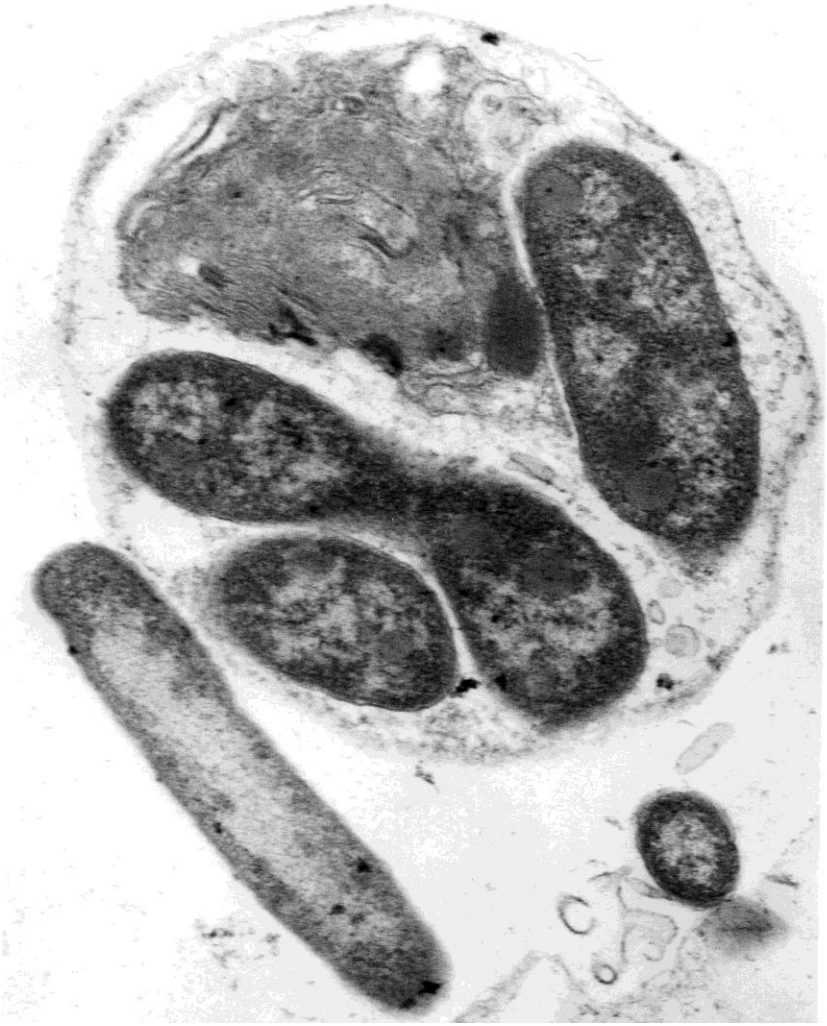


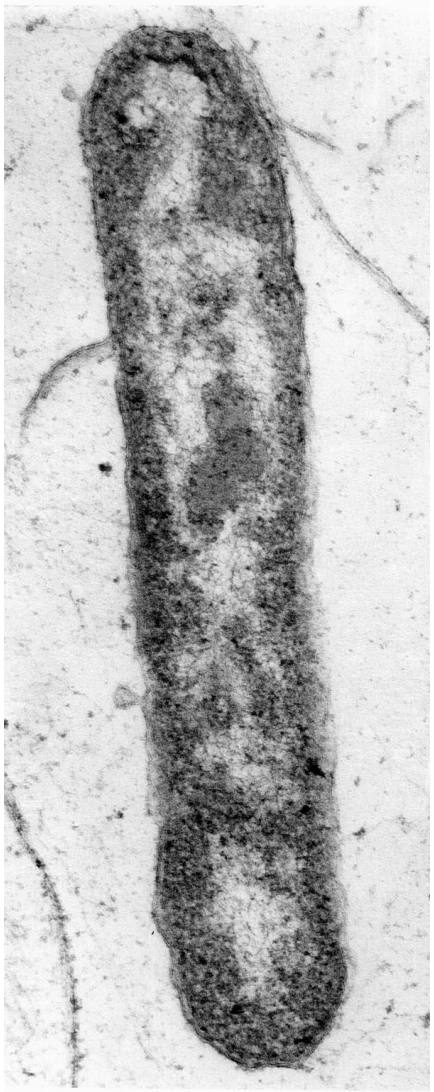
Day 3: infected algal cells: bacterial cysts inside infected cells



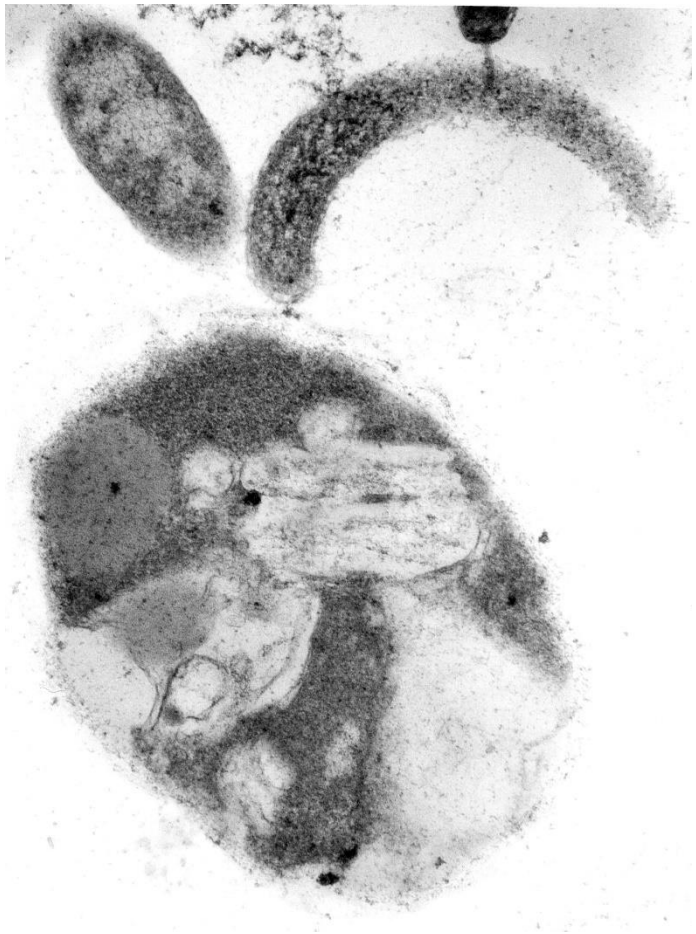


Day 3: infected algal cells: cysts inside, and rod-shaped bacteria outside

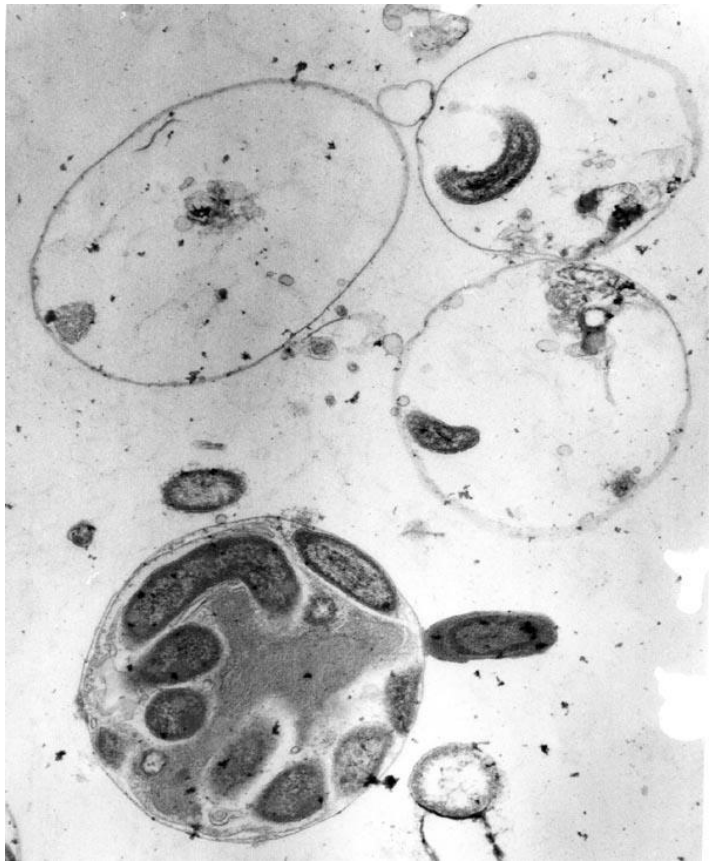




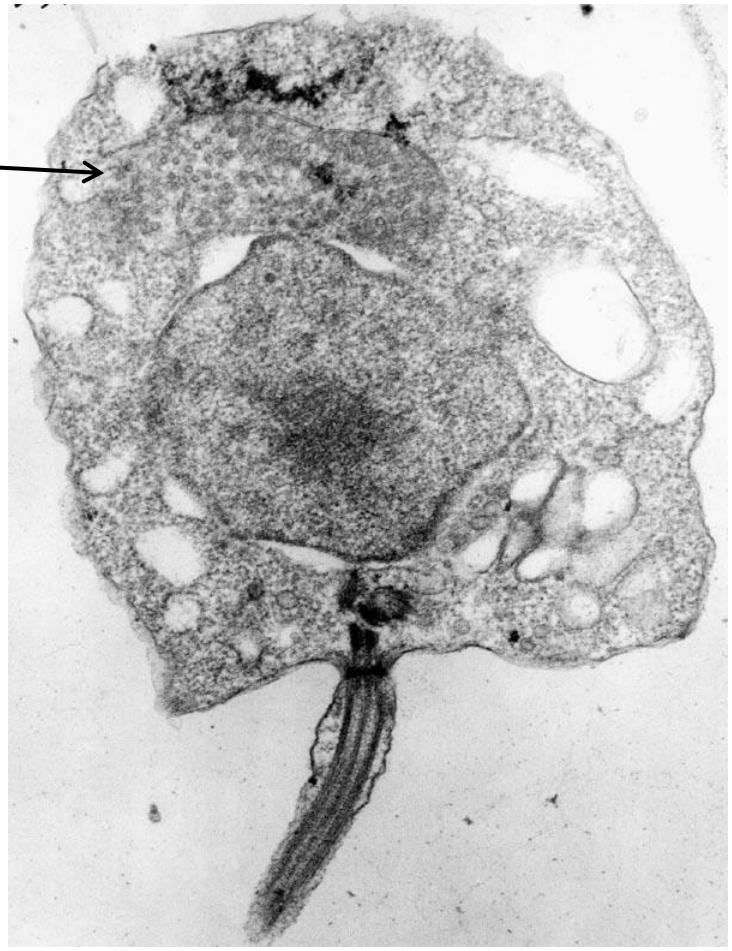
Day 3: infected algal cells: the “fish hook”; I think it’s the same as the rod-shaped.



Day 4: algal remnants: many algal cells empty; in many cases cell wall degraded



Day 4: Protist flagellated cells also present (notice tubular cristae in mitochondrion)



Sapphire 60445 bacterial contaminant, part 2

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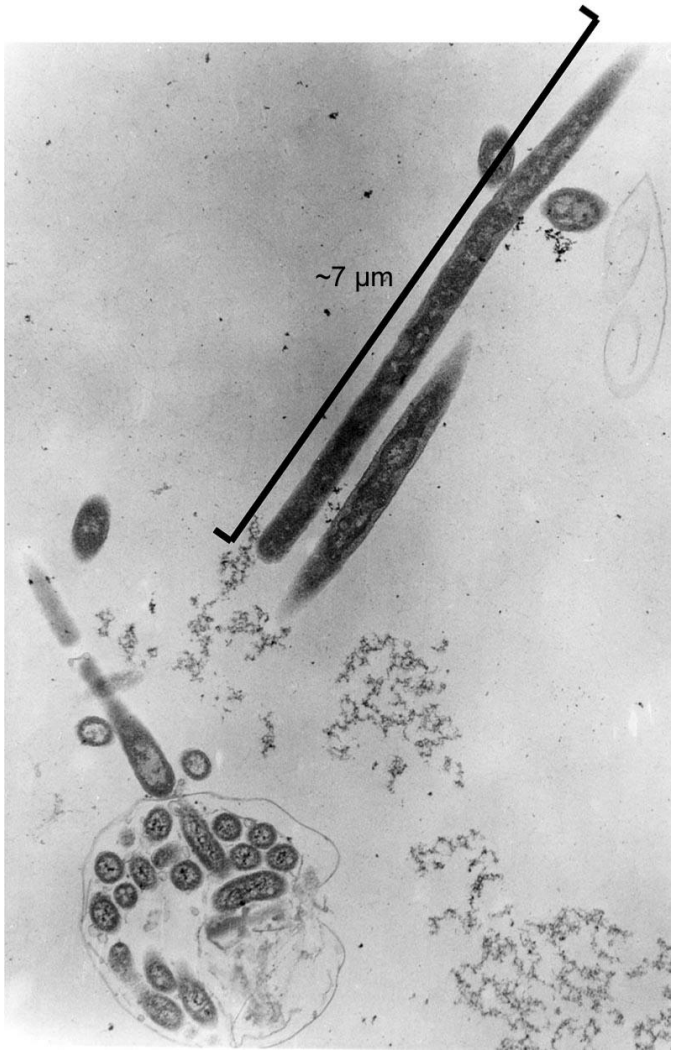
Additional images

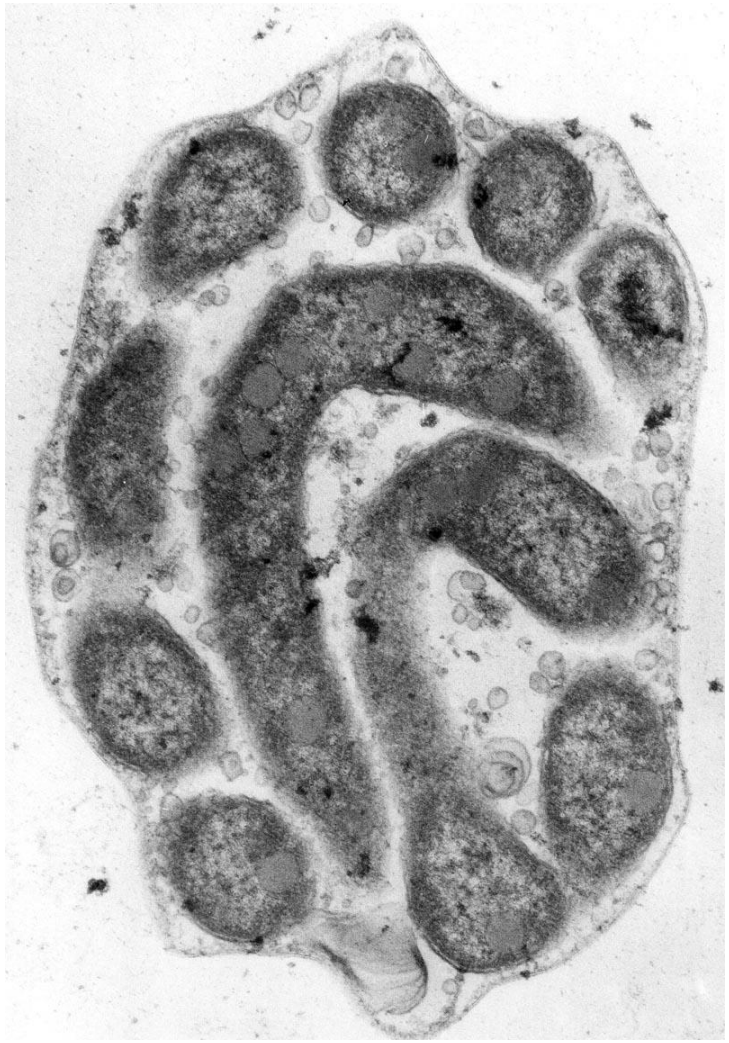
- Slides 3 and 4 are long bacteria
- Slide 5 are images of binary fission
- Slide 6 is the crescent-shaped bacterium with an appendage
- Slide 7 may be a bacterium crossing the host cell wall and plasma membrane. We may get better images of this at Day 2

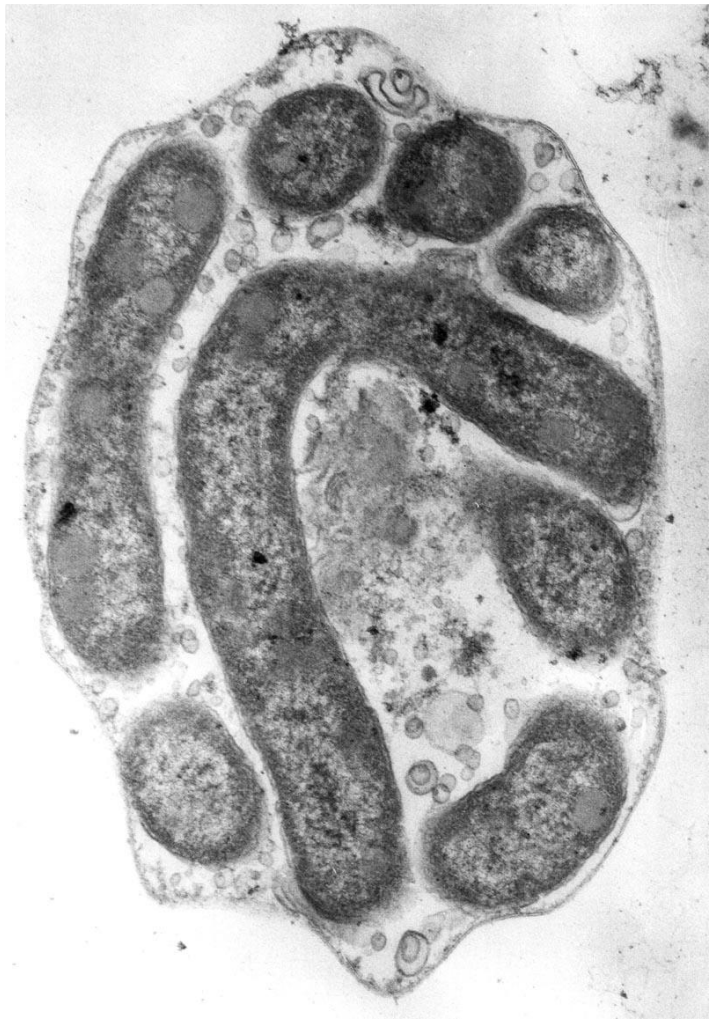
Long bacterium external to (L) and inside (R) host cell



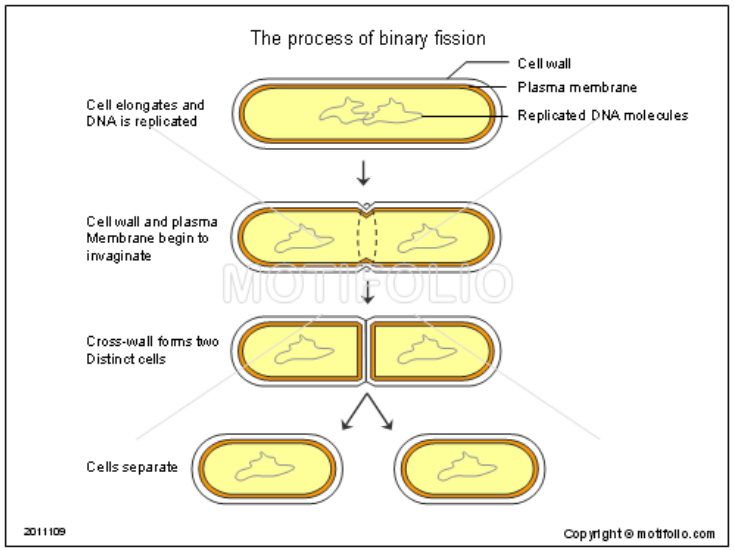
~5 µm
length

Serial sections of same bacterium inside host, so I think what we are seeing is a long bacterium coiled inside

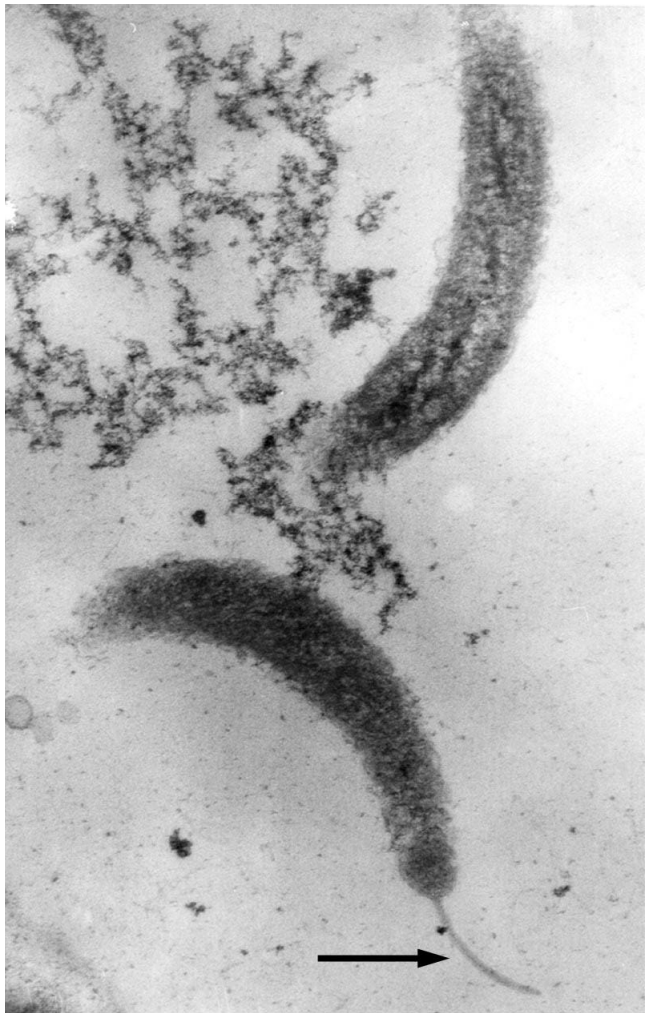


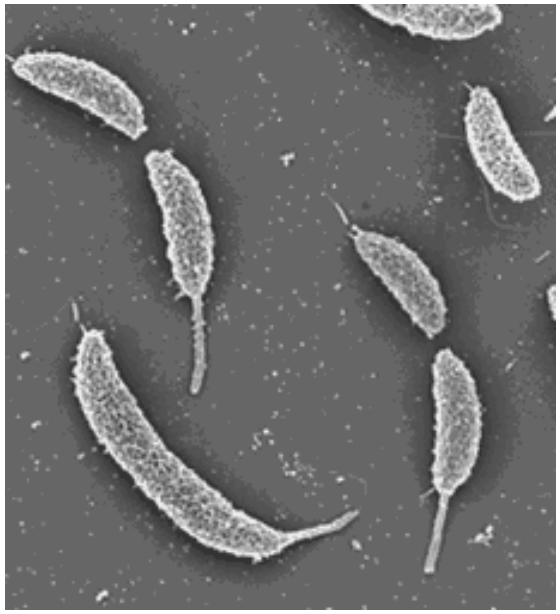


Cell division via binary fission



Hook-shaped or crescent-shaped bacterium (and look-alike Caulobacter)





https://microbewiki.kenyon.edu/index.php/Caulobacter_crescentus

Maybe the bacterium crossing the host cell wall (arrow)