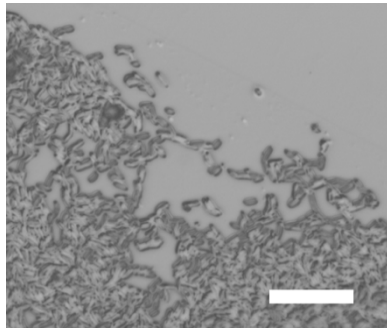


# Focused Ion Beam (FIB) Sectioning of Frozen Samples

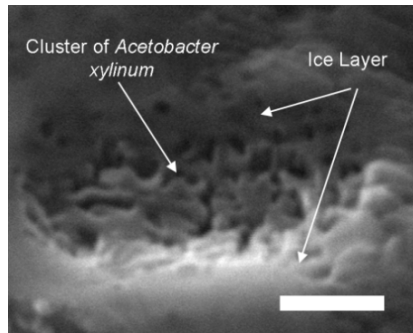
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Cryo-electron microscopy has become a promising tool to study cellular assemblies in their native state by immobilizing biological cells instantly in a cryogenic environment. Although FIB has become an invaluable tool for materials science, the lack of milling processes for biological materials has prevented this capability from being used to any extent in the biological sciences. Here we demonstrate using a dual beam FIB to section frozen samples, which facilitates automatic data acquisition of cellular structures. Two applications are being investigated: FIB of *Acetobacter xylinum* bacteria after plunge freezing and interfaces between artificial surfaces and biological cells.

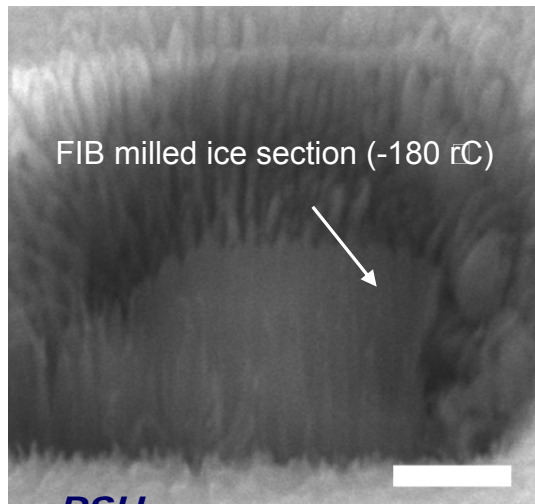
FIB milled frozen *Acetobacter xylinum*



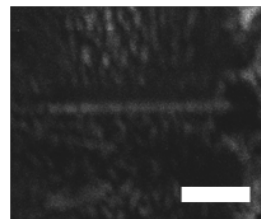
Optical (scale: 20  $\mu\text{m}$ )



SEM (scale: 3  $\mu\text{m}$ )



FIB milled ice section (-180 rC)



Thin section of ice (400nm) ready for TEM lift out (scale: 5  $\mu\text{m}$ )