

For tomographic data, the processed tomograms can be quite substantial.

1. What should we store?

## TILT SERIES:

130 images

4k x 4k (“counting mode”)

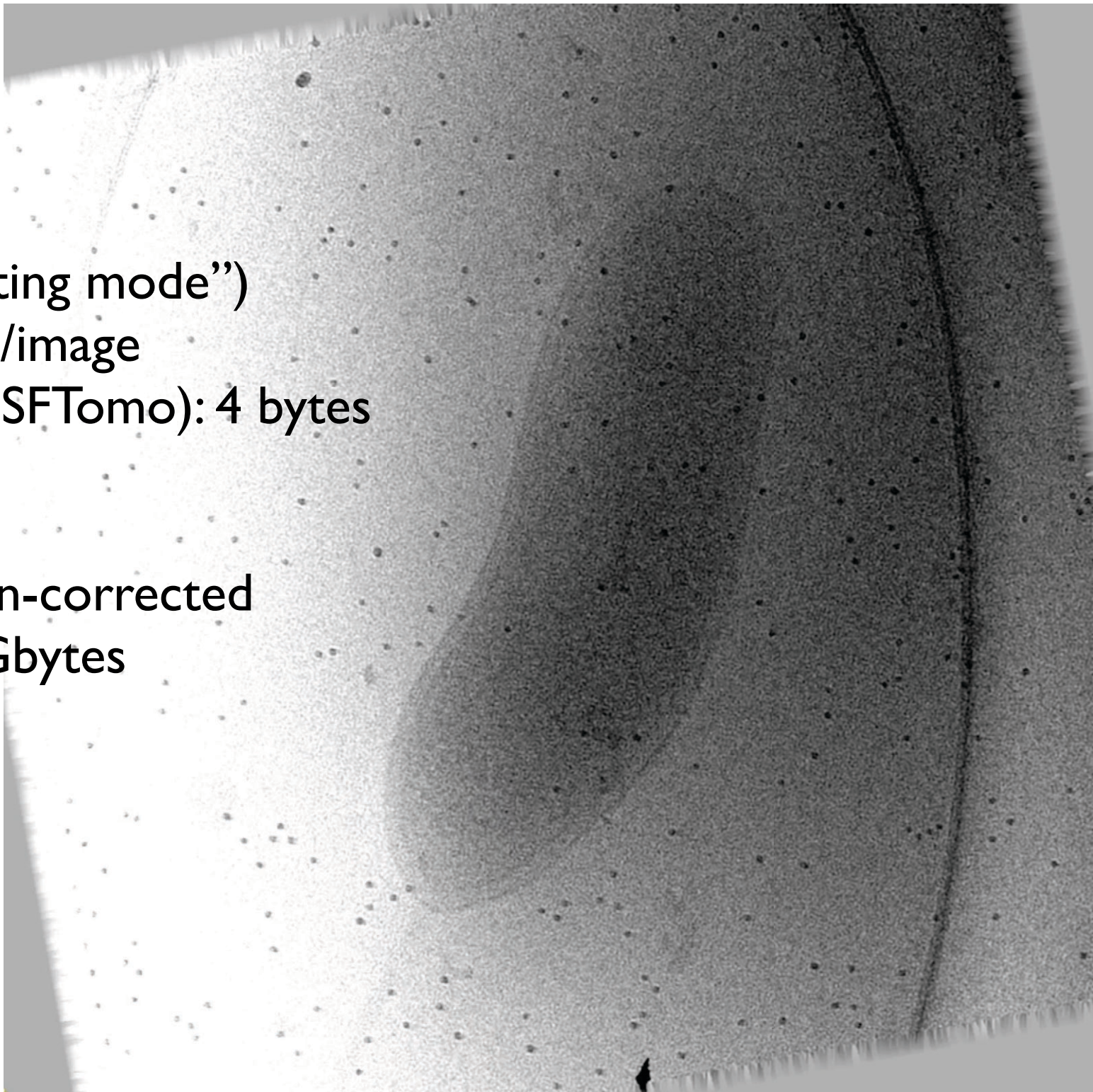
6 movie frames/image

pixeldepth (UCSFTomo): 4 bytes

= 50 Gbytes

Just save motion-corrected

tilt-series = 9 Gbytes



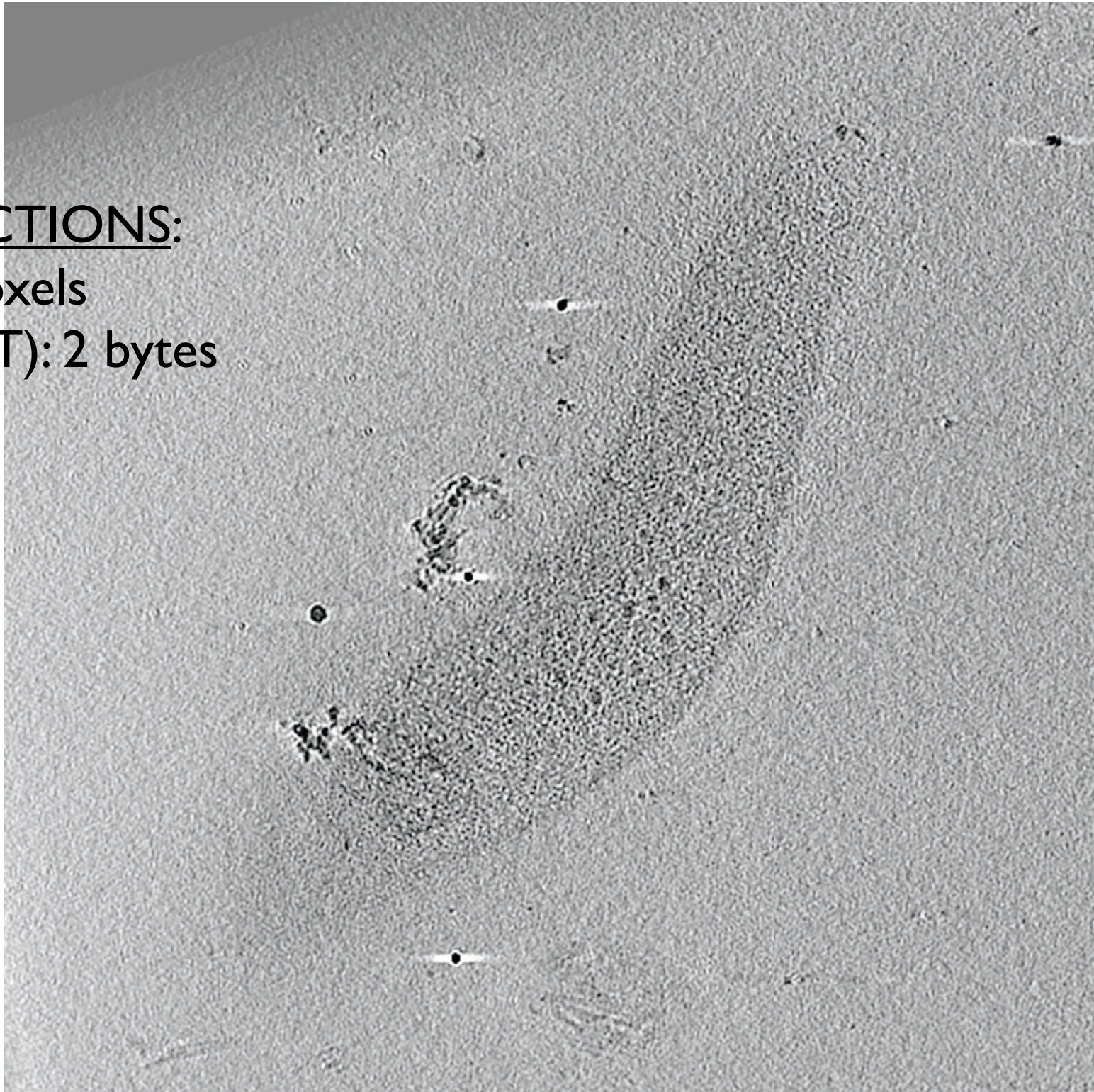


## RECONSTRUCTIONS:

2k x 2k x 1k voxels

pixeldepth (SIRT): 2 bytes

= 8 Gbytes



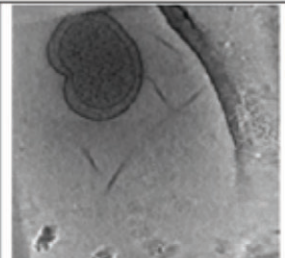
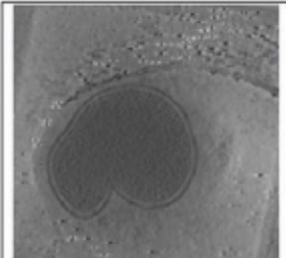
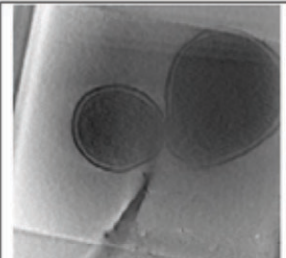
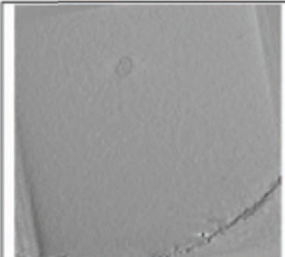
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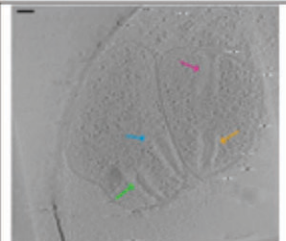
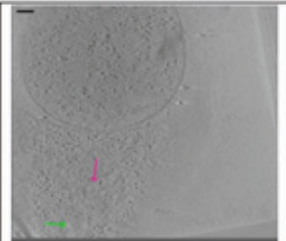
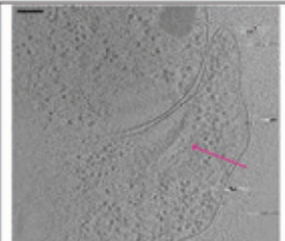
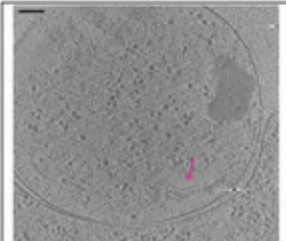
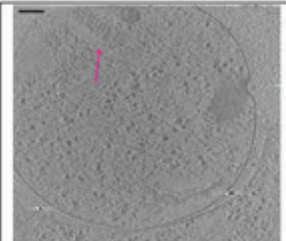
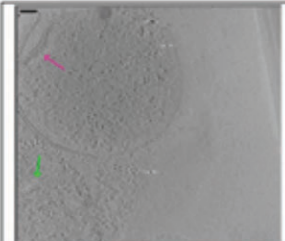
2. How?



## Latest Modified Datasets: ([browse all](#))

 <p>"Barbie's HIV-1 cores TRIM5α"  <a href="#">sd2015-02-02-2</a>                      (visits: 10)                      Last modified:                      2016-03-28 13:16:49</p>	 <p>"Salmonella enterica subsp. enterica"  <a href="#">mb2011-08-26-4</a>                      (visits: 8)                      Last modified:                      2016-03-21 11:26:57</p>	 <p>"Salmonella enterica subsp. enterica"  <a href="#">mb2011-11-23-1</a>                      (visits: 3)                      Last modified:                      2016-03-20 21:33:52</p>	 <p>"Salmonella enterica subsp. enterica"  <a href="#">mb2011-02-04-15</a>                      (visits: 4)                      Last modified:                      2016-03-20 12:51:57</p>	 <p>"Salmonella enterica subsp. enterica"  <a href="#">mb2011-03-02-9</a>                      (visits: 7)                      Last modified:                      2016-03-20 12:30:22</p>	 <p>"Barbie's HIV-1 cores TRIM5α"  <a href="#">sd2015-02-02-8</a>                      (visits: 3)                      Last modified:                      2016-03-20 12:17:08</p>
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## Latest Snapshots: ([browse all](#))

 <p>Continued at sc2016-03-15-16                      02 image after 10113, full res                      Shear angle: 1.50, 1.50, 2.00                      Shear center point: (265, 455, 585)                      Scale bar: 100 nm    Zoom: 1.5    Stack: 8                      attachment organelle  <a href="#">sc2016-03-15-16</a>                      (2016-03-28 17:41:27)</p>	 <p>Continued at sc2016-03-15-14                      02 image after 10113, full res                      Shear angle: 1.50, 1.50, 2.00                      Shear center point: (265, 455, 585)                      Scale bar: 100 nm    Zoom: 1.5    Stack: 10                      attachment organelle  <a href="#">sc2016-03-15-14</a>                      (2016-03-28 17:32:37)</p>	 <p>Continued at sc2016-03-15-14                      02 image after 10113, full res                      Shear angle: 1.50, 1.50, 2.00                      Shear center point: (265, 455, 585)                      Scale bar: 100 nm    Zoom: 1.5    Stack: 10                      attachment organelle  <a href="#">sc2016-03-15-14</a>                      (2016-03-28 17:31:14)</p>	 <p>Continued at sc2016-03-15-14                      02 image after 10113, full res                      Shear angle: 1.50, 1.50, 2.00                      Shear center point: (265, 455, 585)                      Scale bar: 100 nm    Zoom: 1.5    Stack: 10                      attachment organelle  <a href="#">sc2016-03-15-14</a>                      (2016-03-28 17:29:58)</p>	 <p>Continued at sc2016-03-15-14                      02 image after 10113, full res                      Shear angle: 1.50, 1.50, 2.00                      Shear center point: (265, 455, 585)                      Scale bar: 100 nm    Zoom: 1.5    Stack: 7                      attachment organelle  <a href="#">sc2016-03-15-14</a>                      (2016-03-28 17:27:25)</p>	 <p>Continued at sc2016-03-15-14                      02 image after 10113, full res                      Shear angle: 1.50, 1.50, 2.00                      Shear center point: (265, 455, 585)                      Scale bar: 100 nm    Zoom: 1.5    Stack: 7                      attachment organelle and part of one  <a href="#">sc2016-03-15-14</a>                      (2016-03-28 17:26:05)</p>
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## Current Status:

Total number of tilt series: **26085**

Total number of species/specimen: **206**

Total number of users: **35**

Total uploaded 3D images/image stacks: **54388**

image stacks (raw data): **26203**

reconstruction/subvolume: **28098**

other 3D images: **87**

Assuming one collects 30 tilt-series/day,

$$\begin{aligned} &= \{9 \text{ Gbytes (tilt-series)} + 8 \text{ Gbytes (reconstruction)}\} * 30 \\ &= 1/2 \text{ terabyte} \end{aligned}$$

Do this 250 days per year, need 125 terabyte drive (~\$10k)

Cost of service contract (~\$200k)

Salaries for facility manager, sys admin, post-doc collecting data, etc.  
with benefits (~\$250k)

Amortized cost of \$6M microscope over 15 years (\$400k)

Amortized cost of building and renovations to put it somewhere (\$200k)

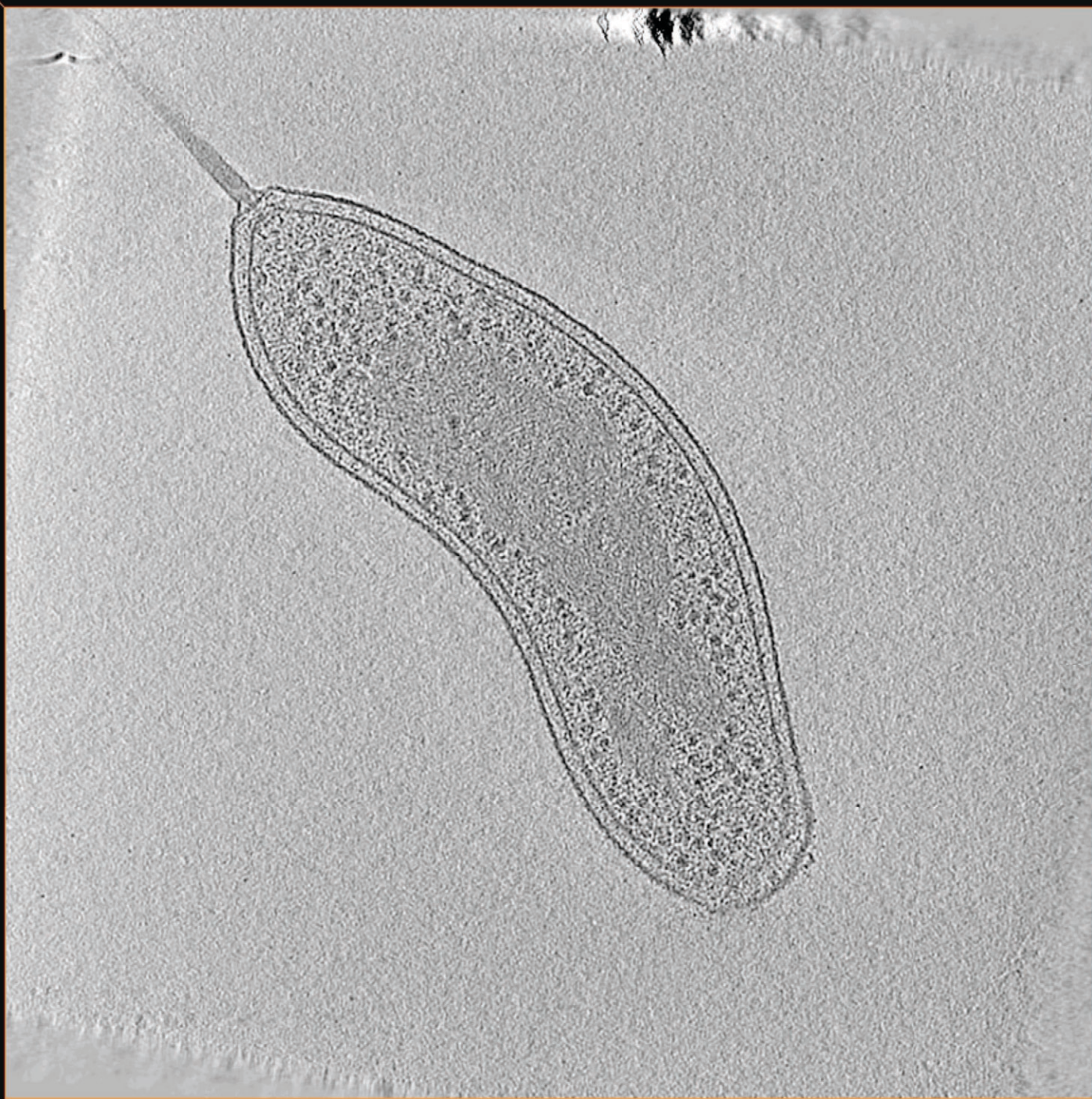
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1. What should we store?

2. How?

3. Emerging strategies for masks/annotations?







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4. How about public database deposition? Is that becoming more acceptable in the community?

Yes: convention is to deposit at least one representative tomogram for each project/result

# Current Jensen lab storage:

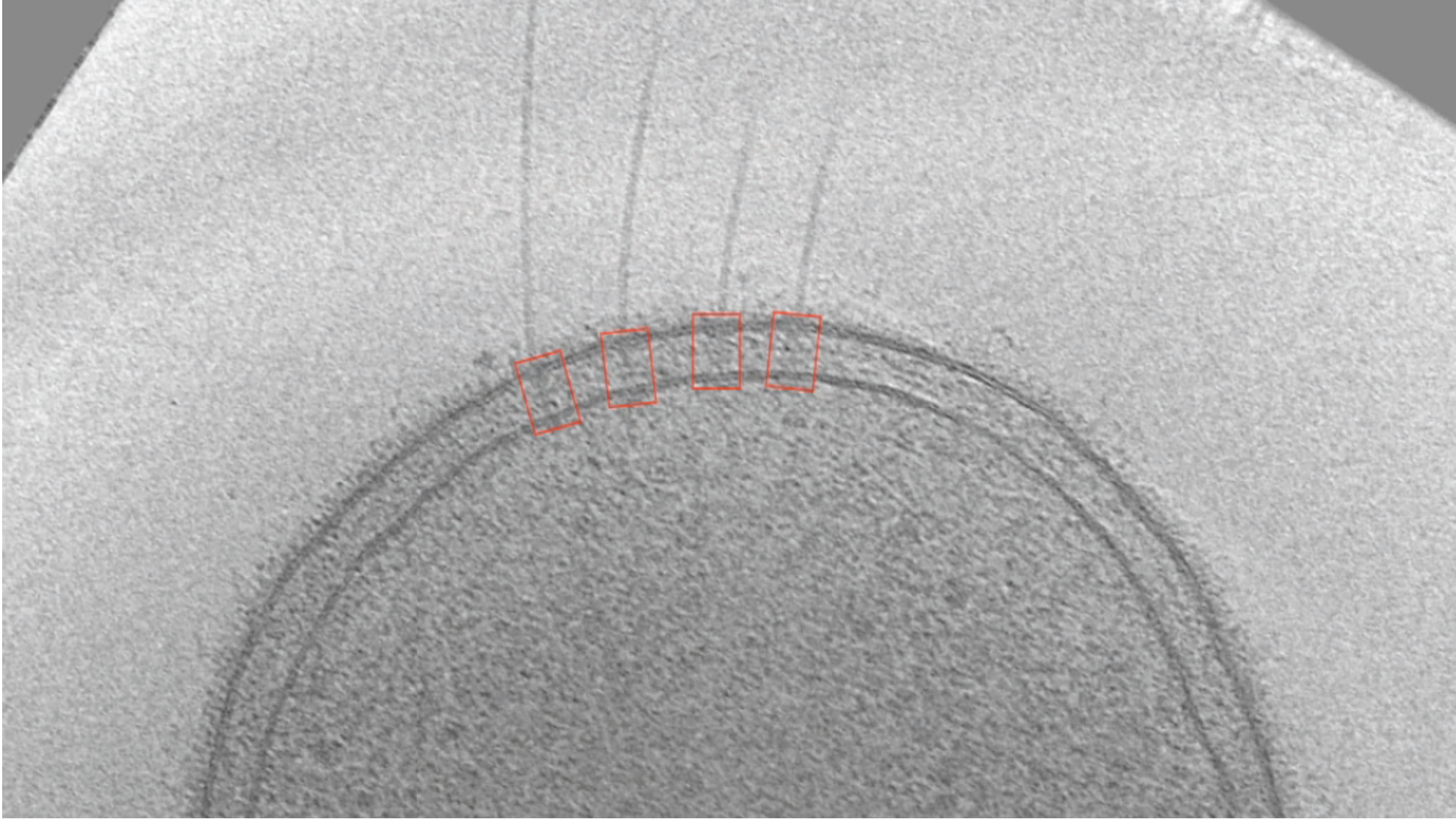
Tomography database: 90 Tbytes

Single particle data: 40 Tbytes

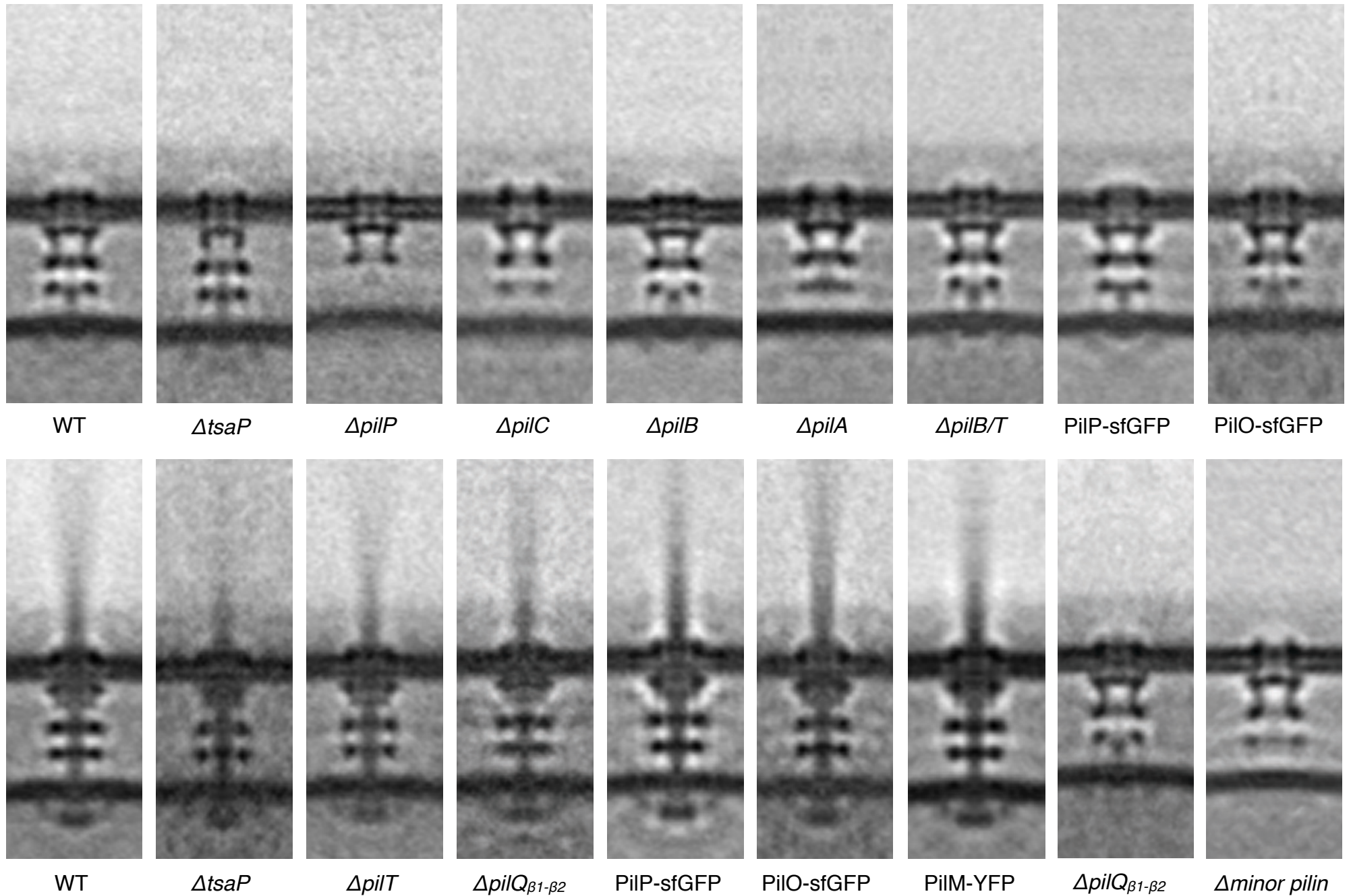
Three central RAID disks (112, 142, and 219 Tbytes)



Example project:  
the bacterial type IV pilus







18 different sub-tomogram averages, 1500 tomograms