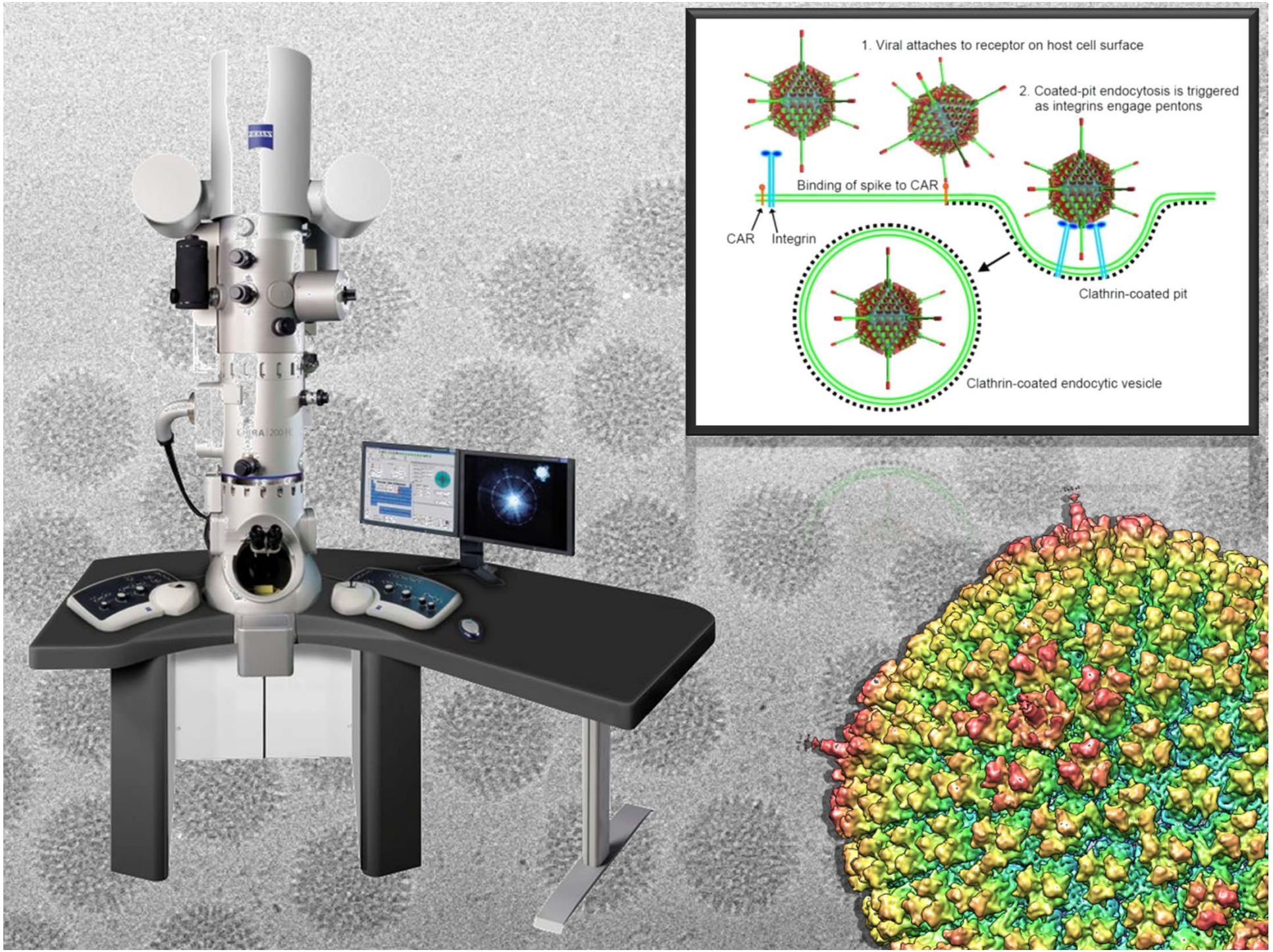
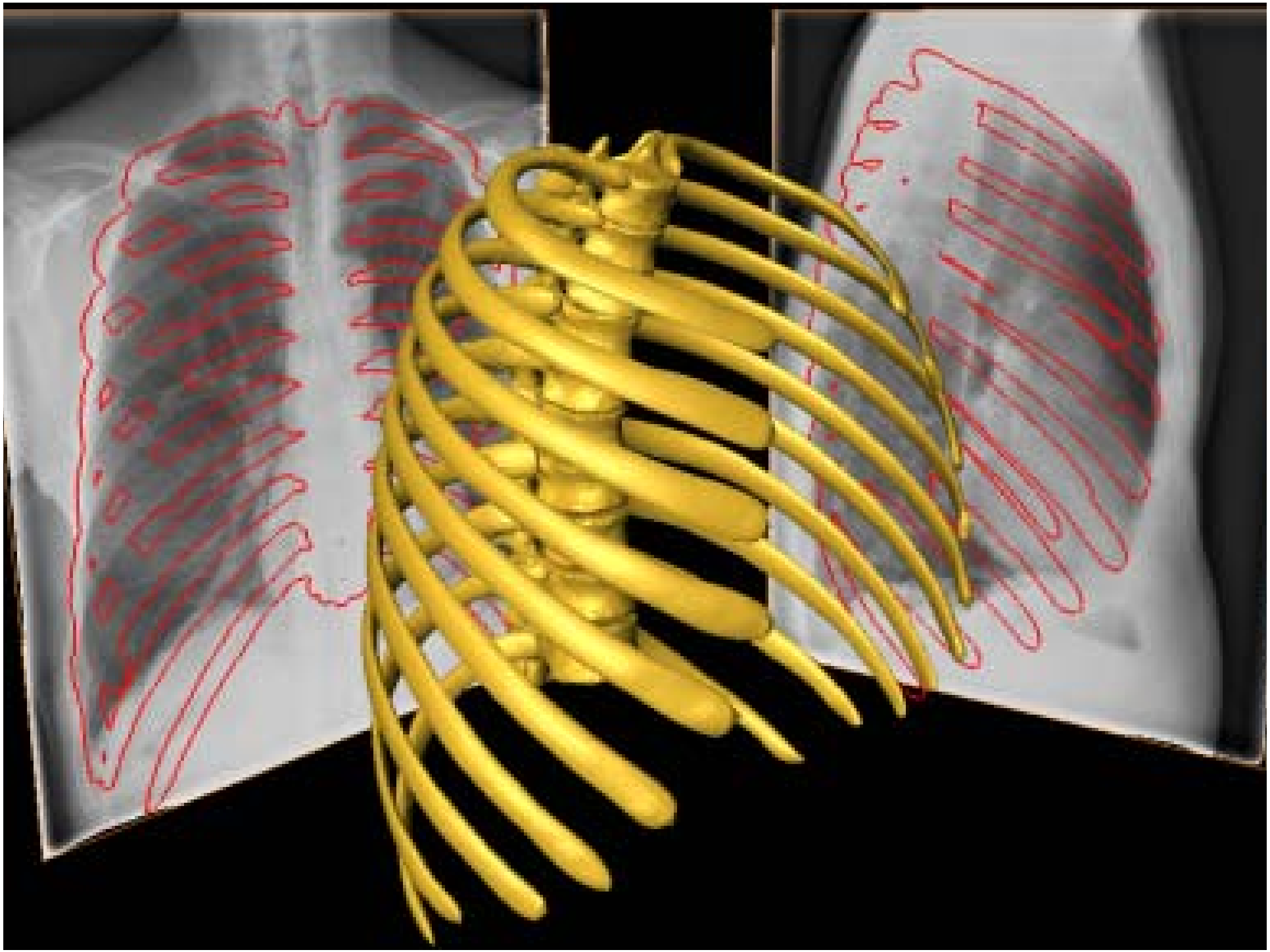
Introducción al procesamiento de Imagen en Microscopia Electrónica

I2PC

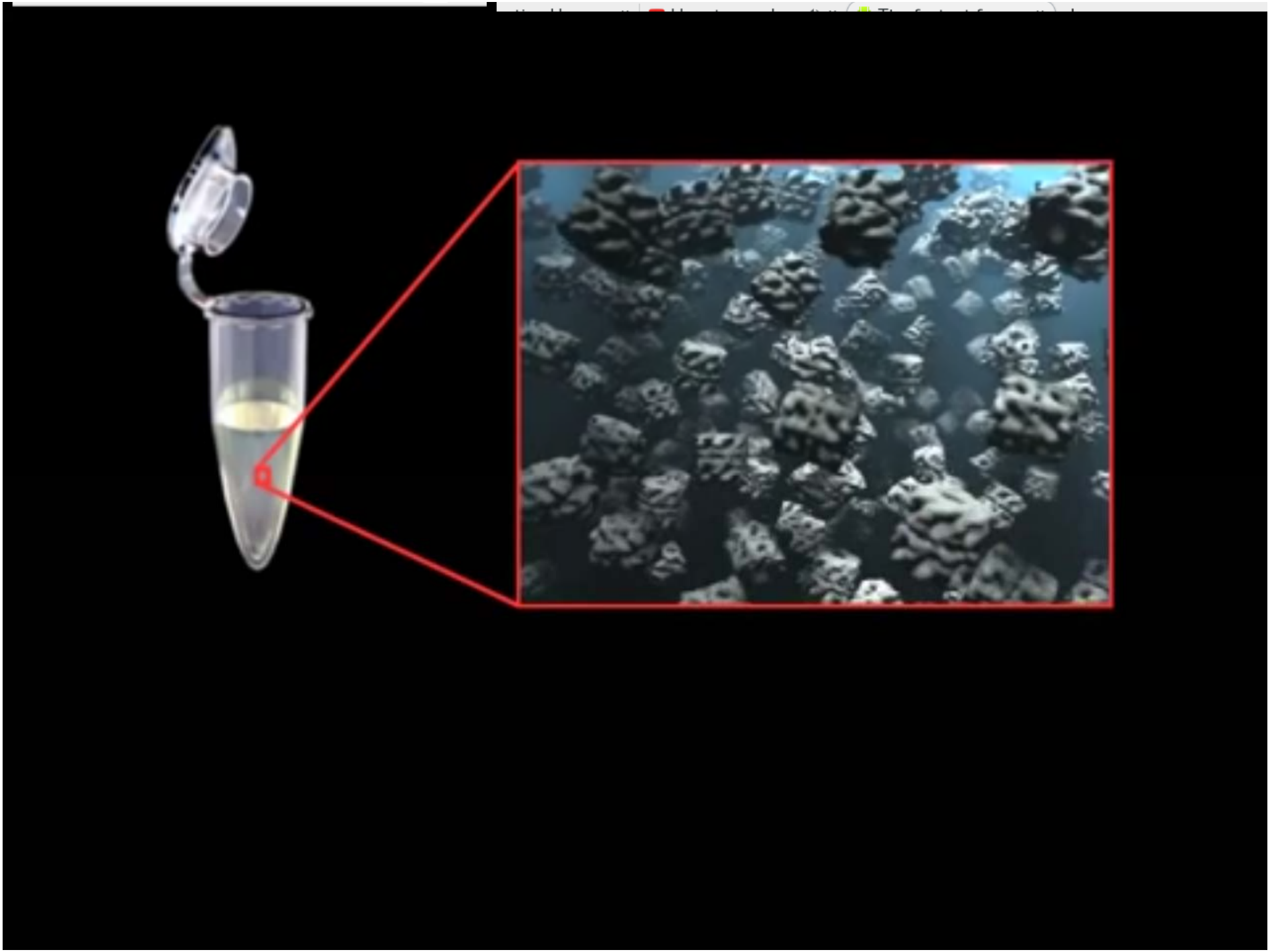
Escuela Politecnica Superior
Instruct Image Processing Center, CNB-CSIC
Roberto Marabini Ruiz


1. Viral attaches to receptor on host cell surface
2. Coated-pit endocytosis is triggered as integrins engage pentons
Binding of spike to CAR
CAR
Integrin
Clathrin-coated pit
Clathrin-coated endocytic vesicle

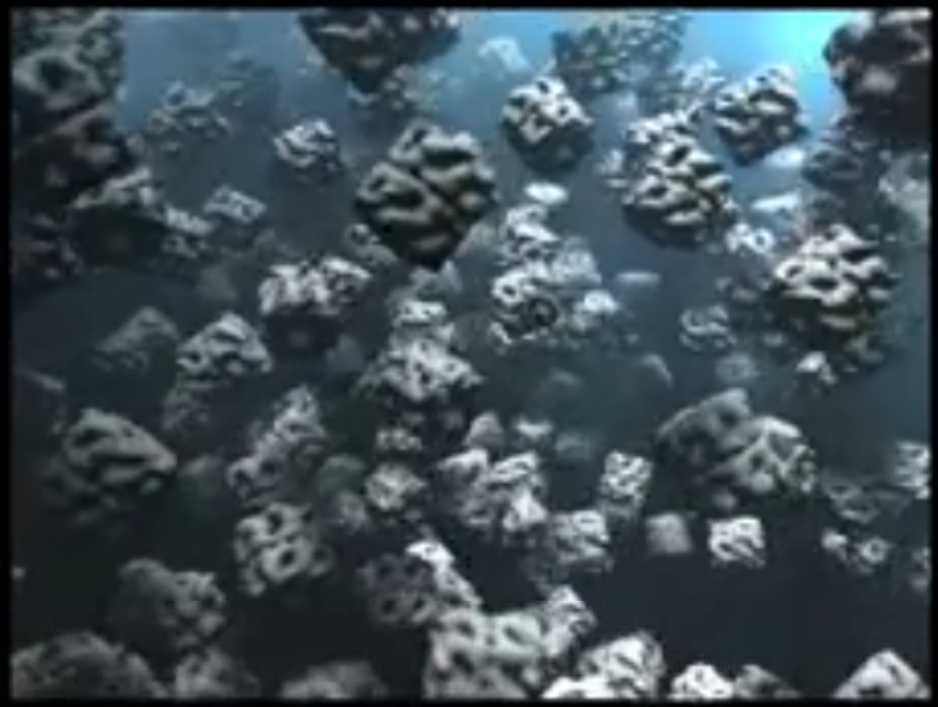


What we do…

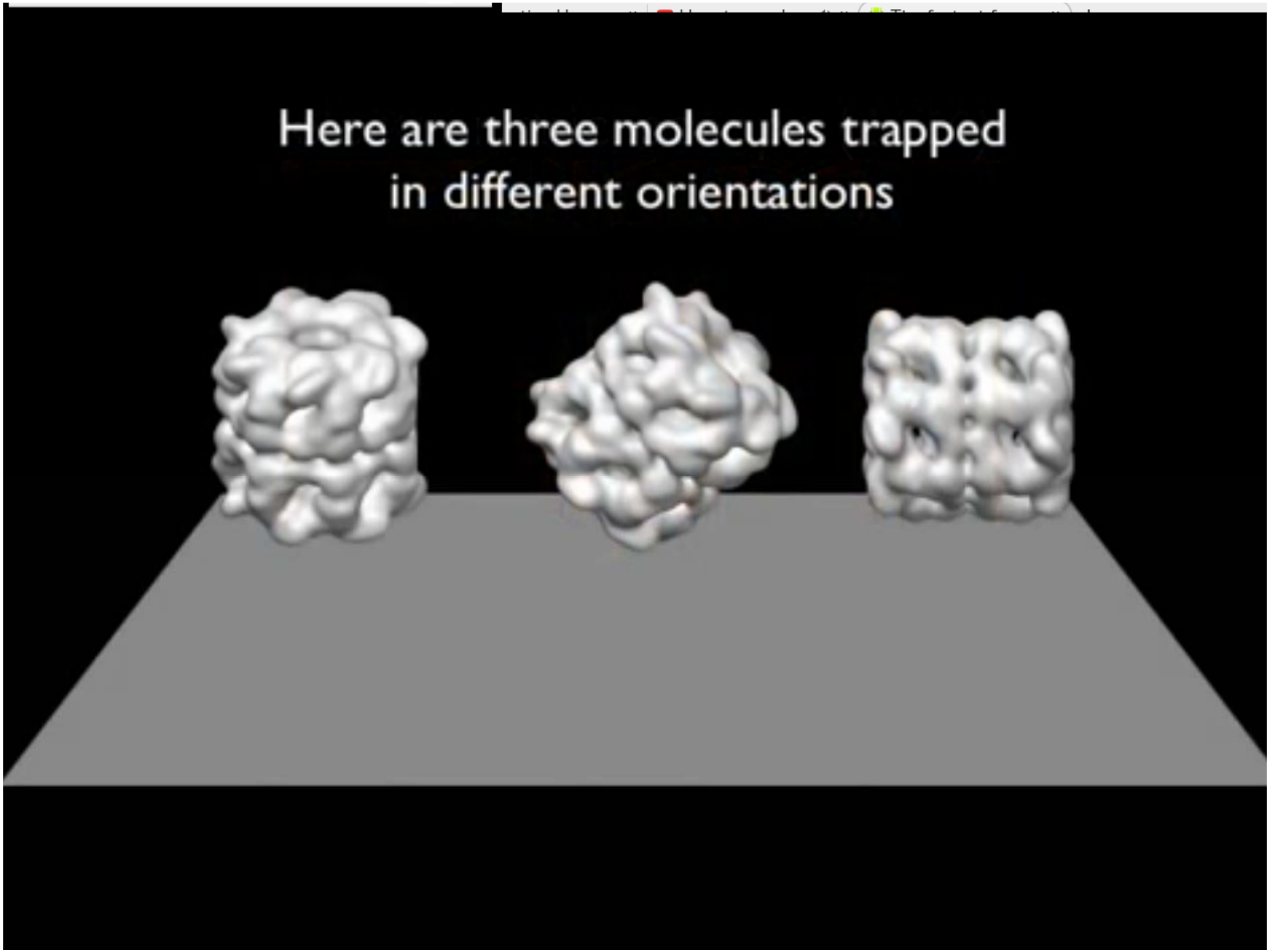
… in more detail

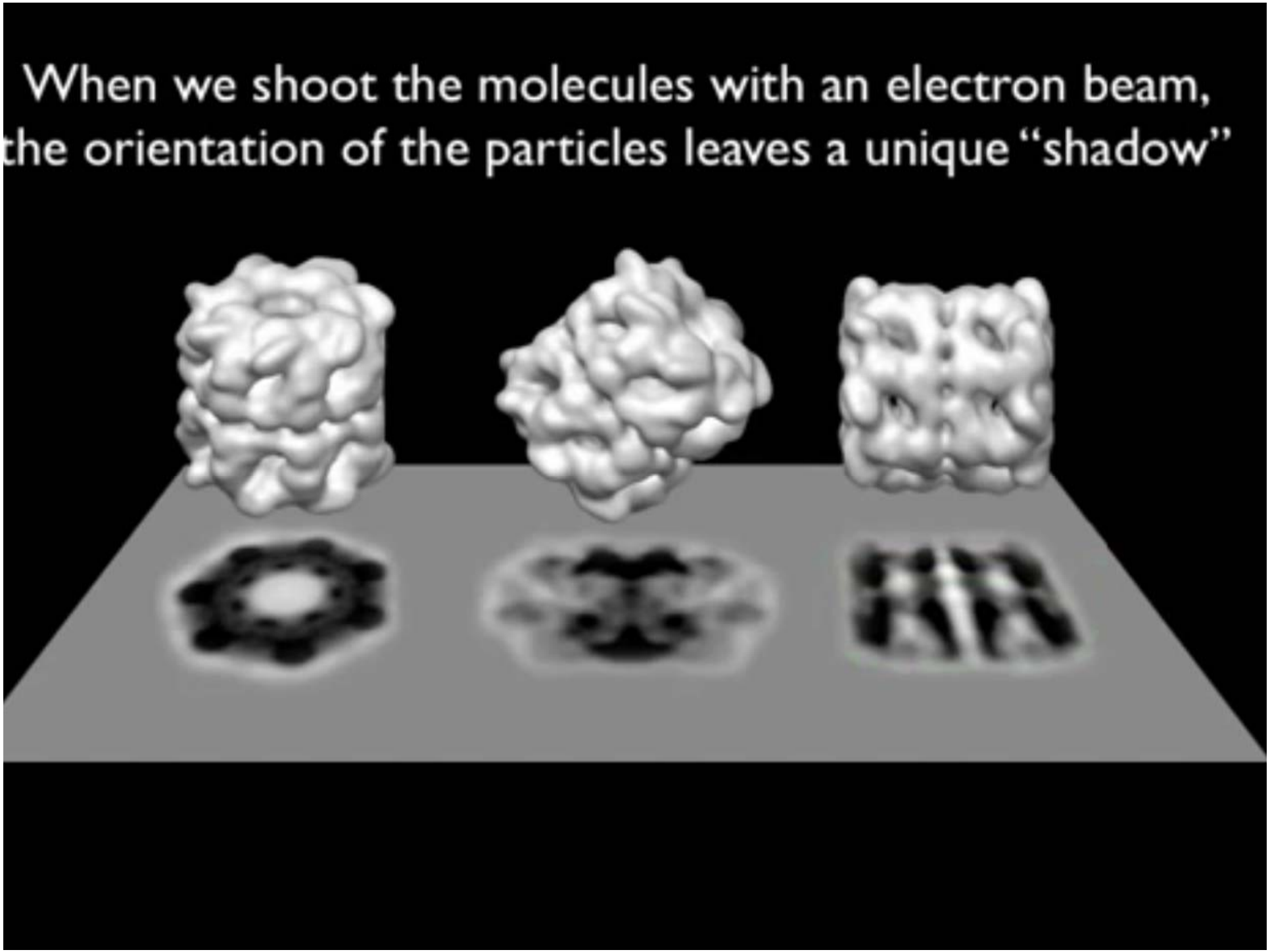


That is how we go from sample in solution...

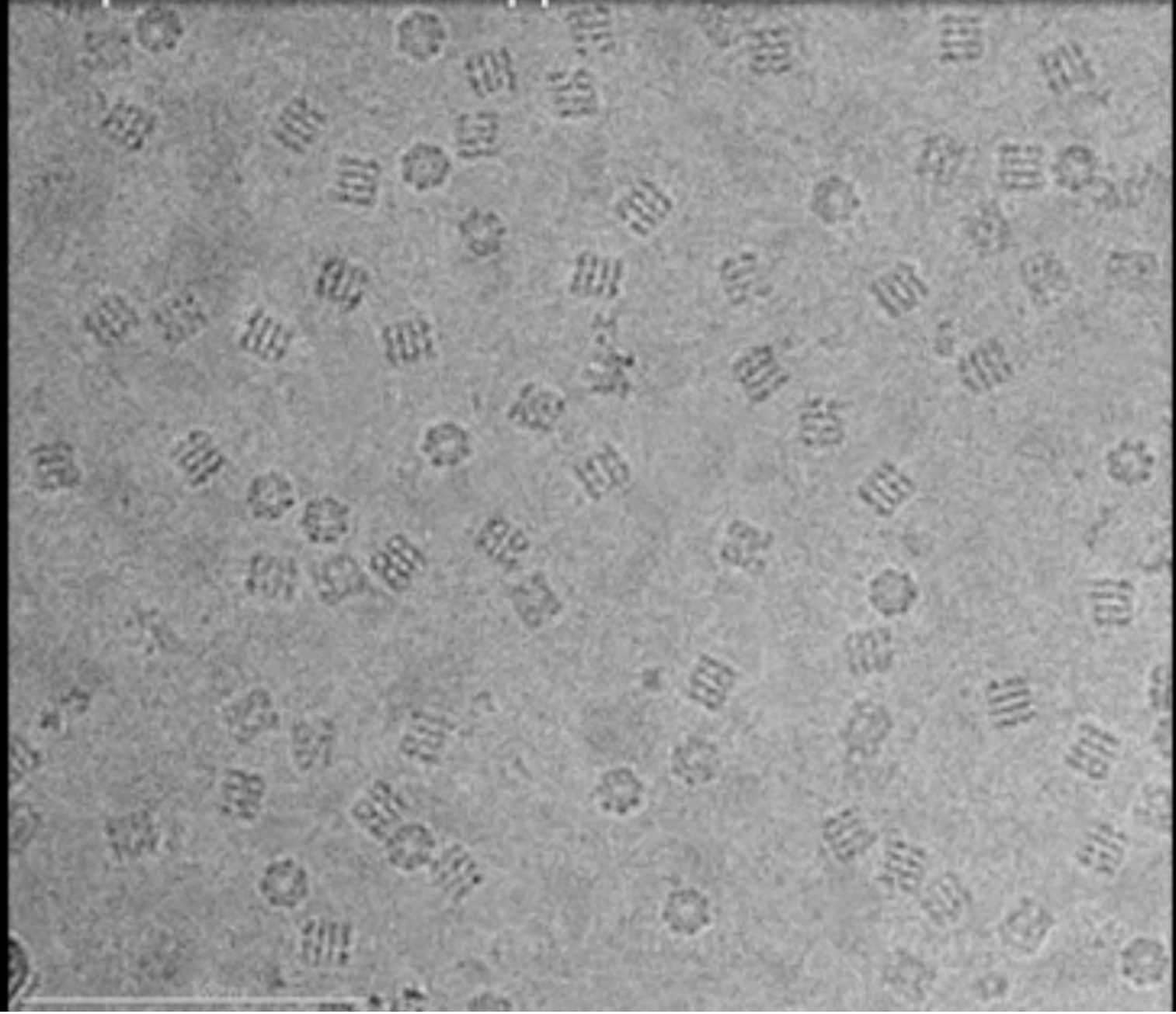


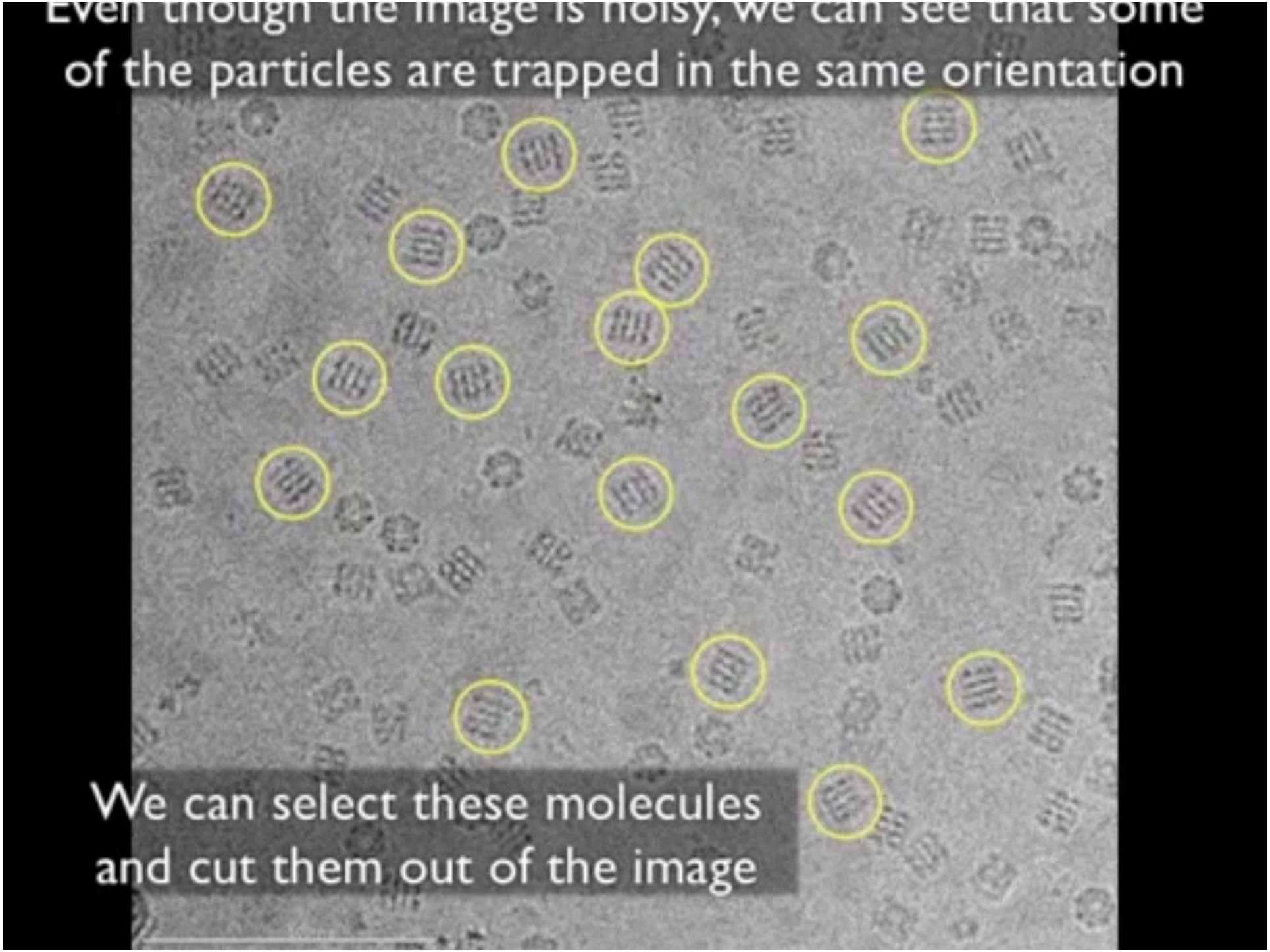
...to molecules frozen in thin ice

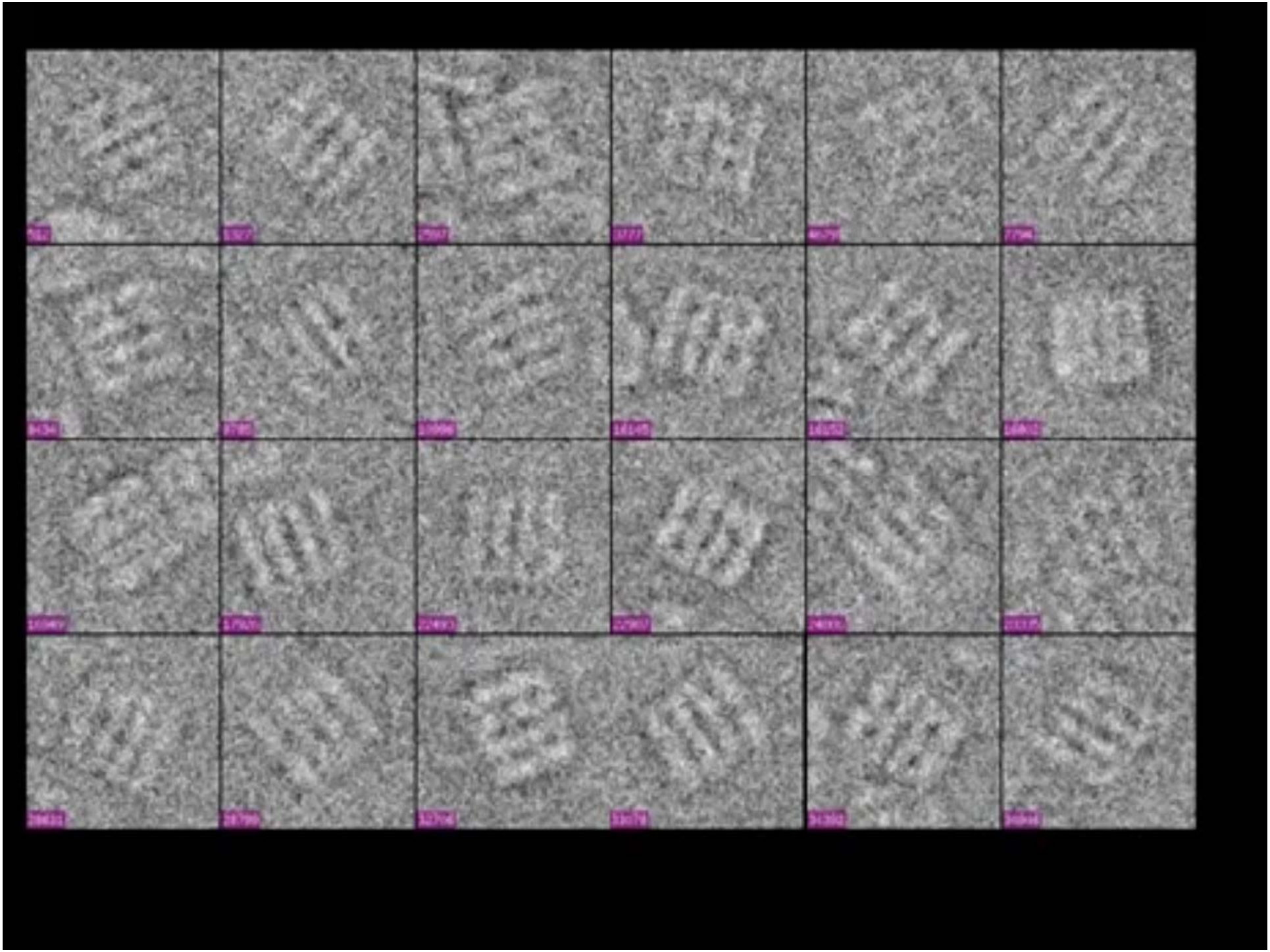

Here are three molecules trapped
in different orientations

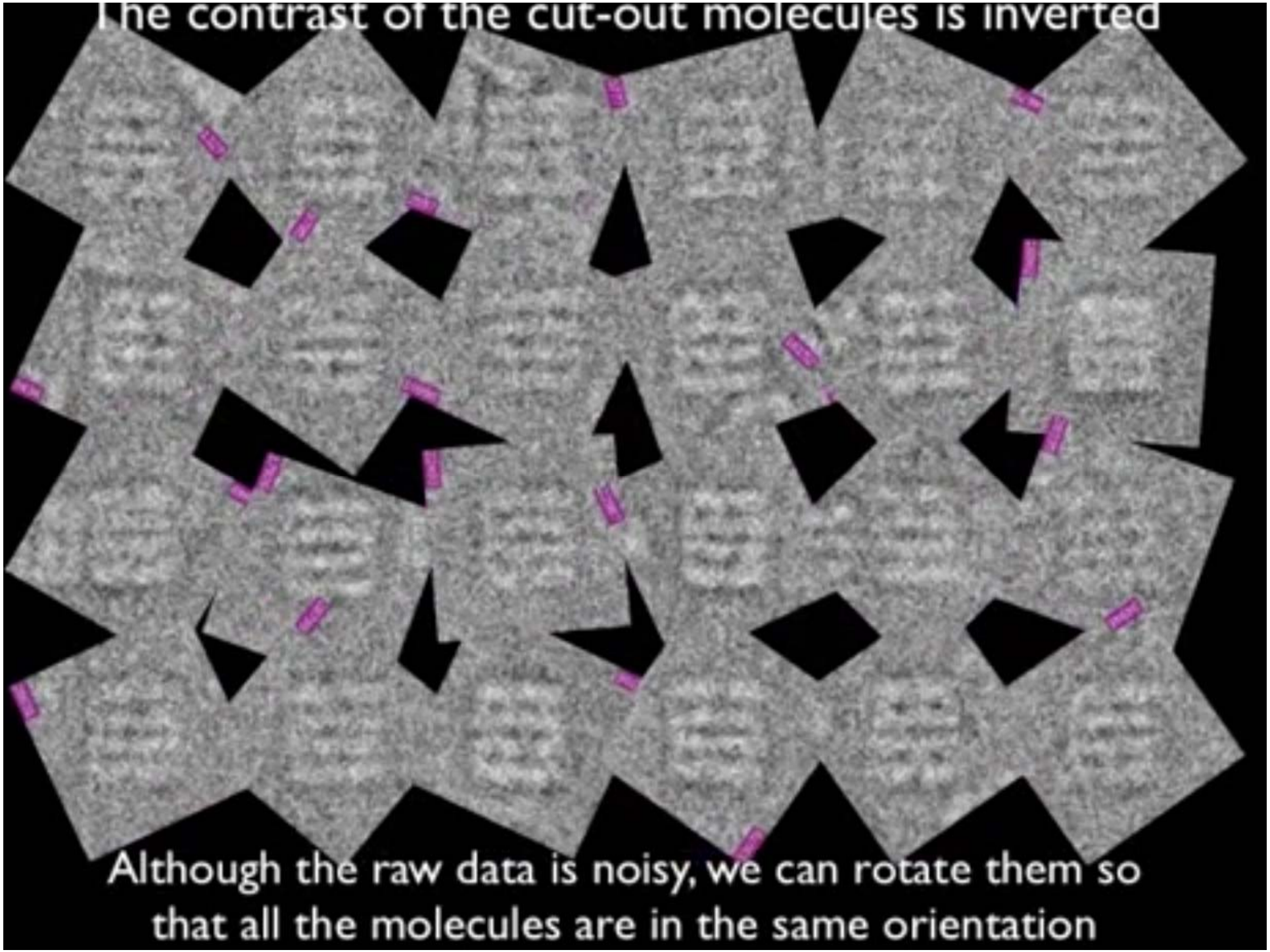

When we shoot the molecules with an electron beam,
the orientation of the particles leaves a unique "shadow"

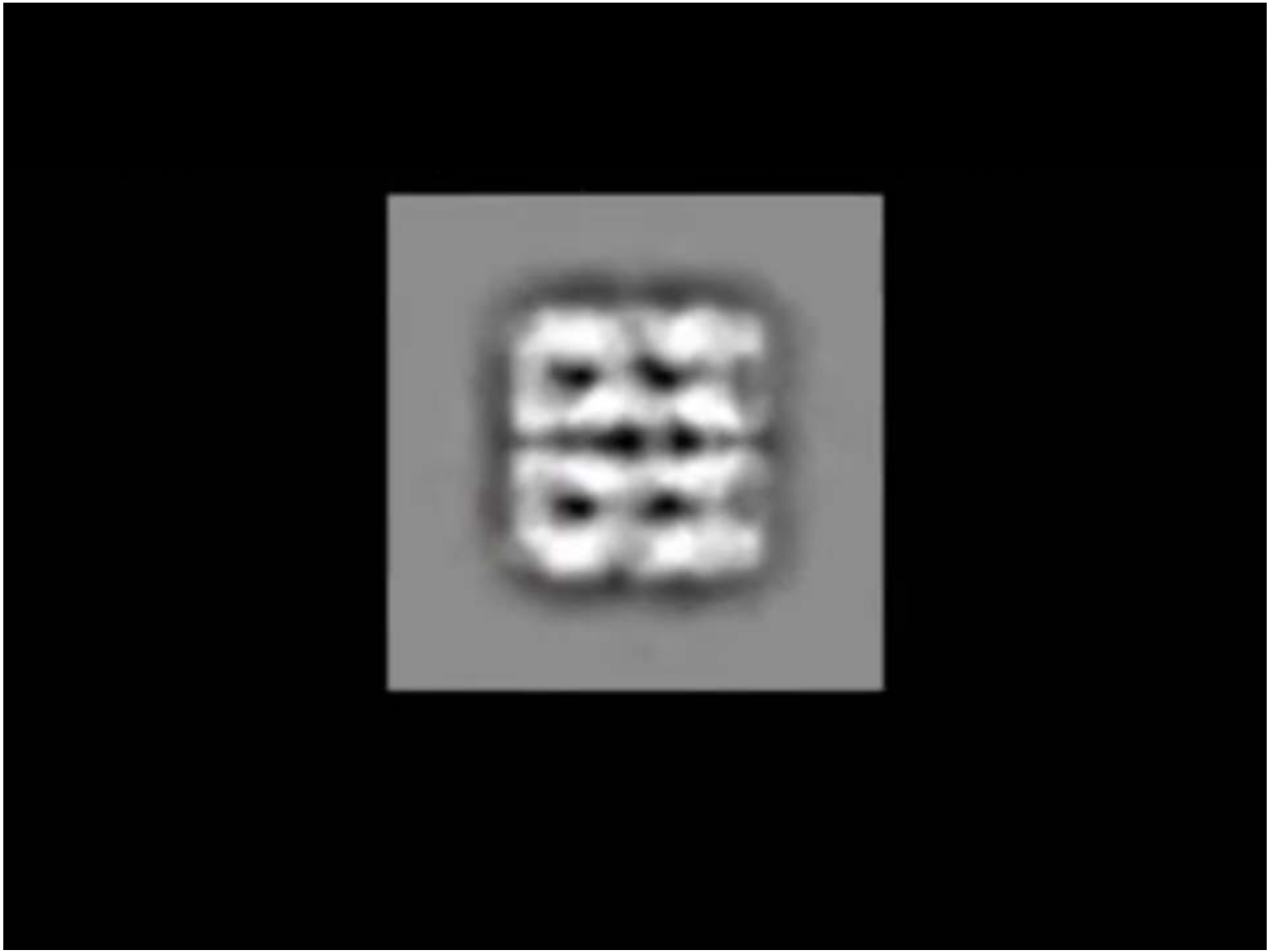
Even though the image is noisy, we can see that some of the particles are trapped in the same orientation



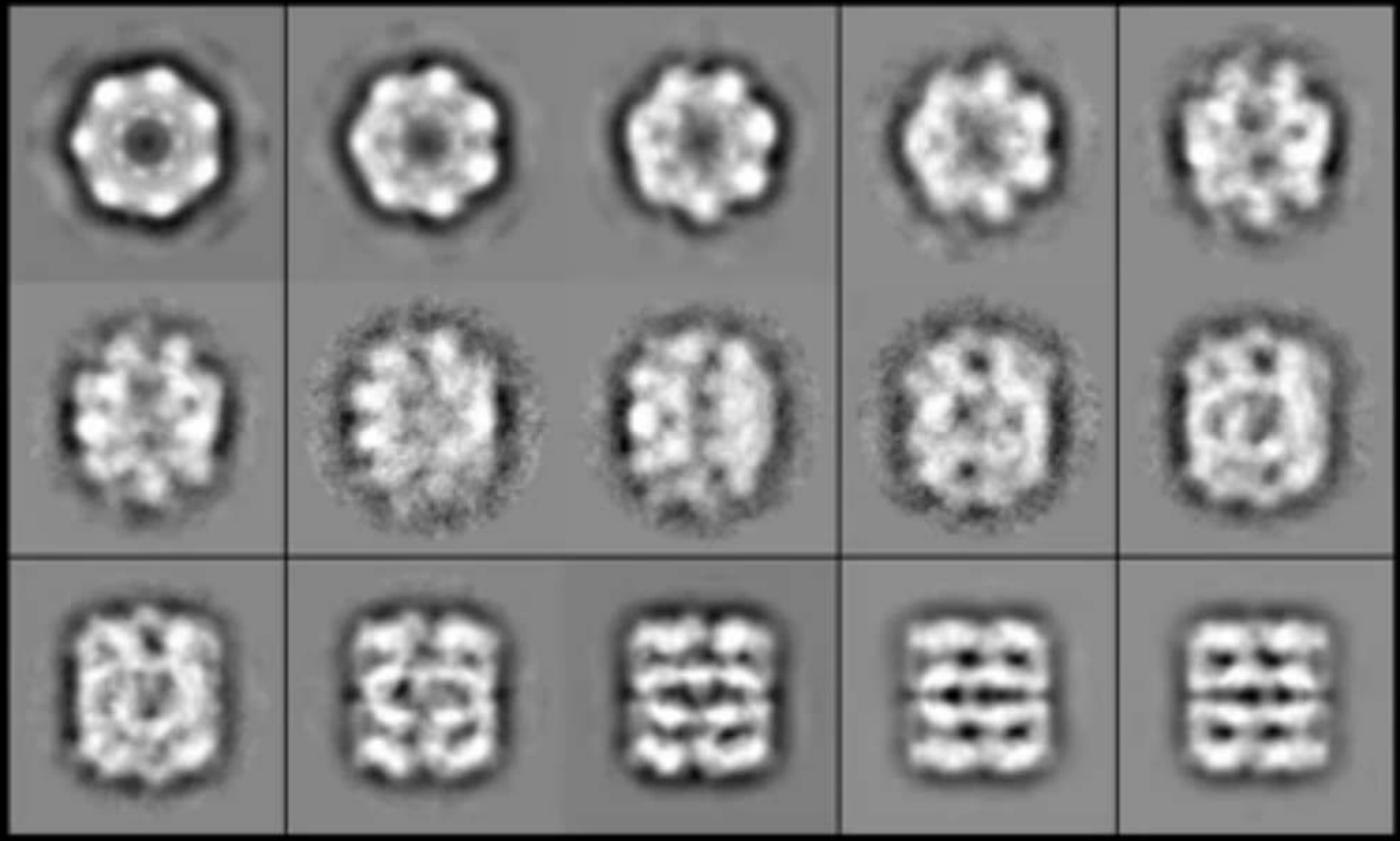

Even though the image is noisy, we can see that some
of the particles are trapped in the same orientation
We can select these molecules
and cut them out of the image



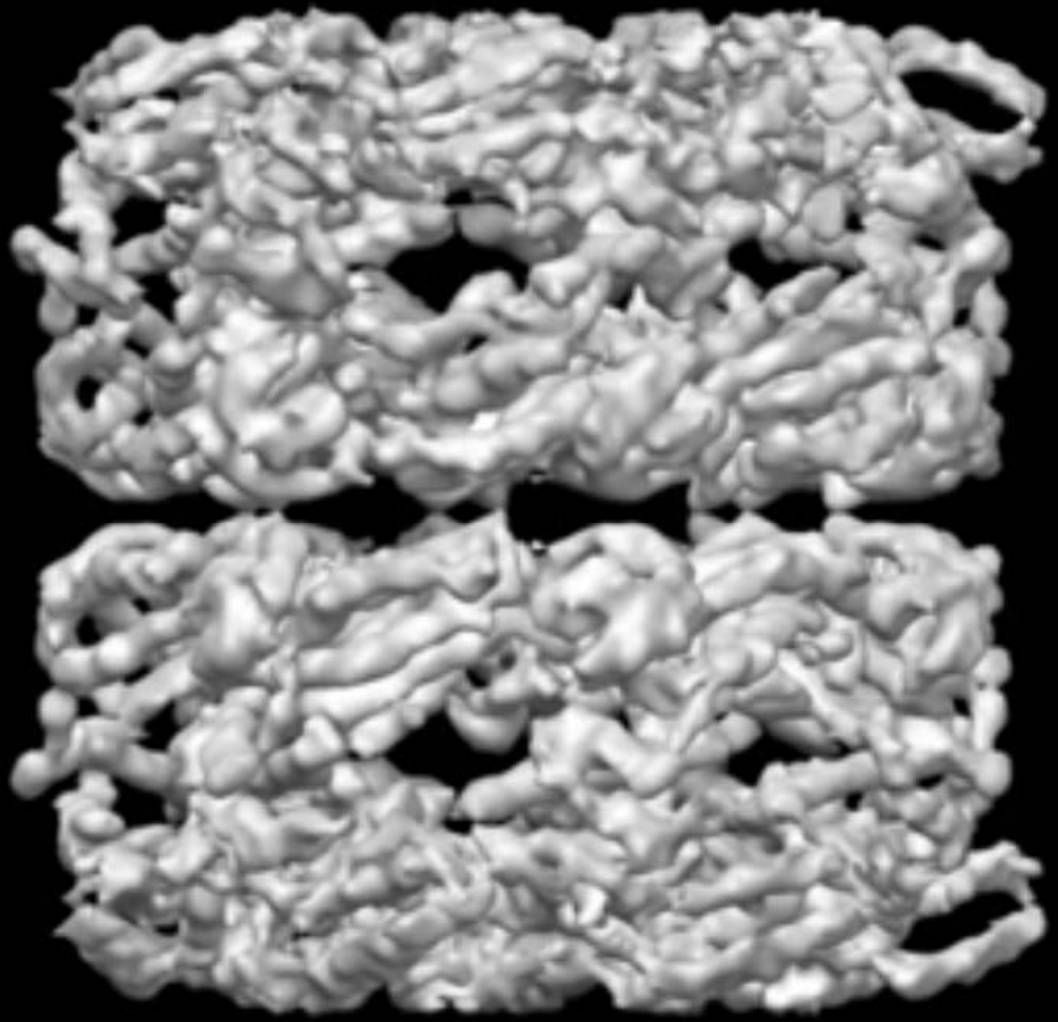

The contrast of the cut-out molecules is inverted
Although the raw data is noisy, we can rotate them so
that all the molecules are in the same orientation



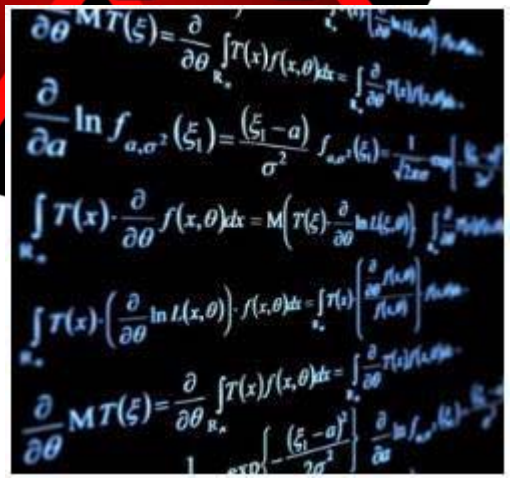
We perform this same process for the different orientations of the molecule



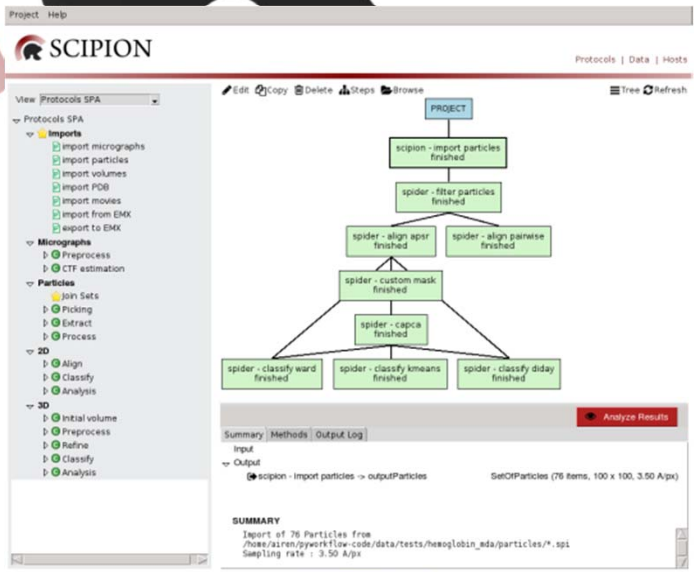
Then we gather all these views and combine them computationally



mipp



SCIPION



CSIC

instruct
Integrating
Biology

http://scipion.i2pc.es

instruct
image
Processing
Center