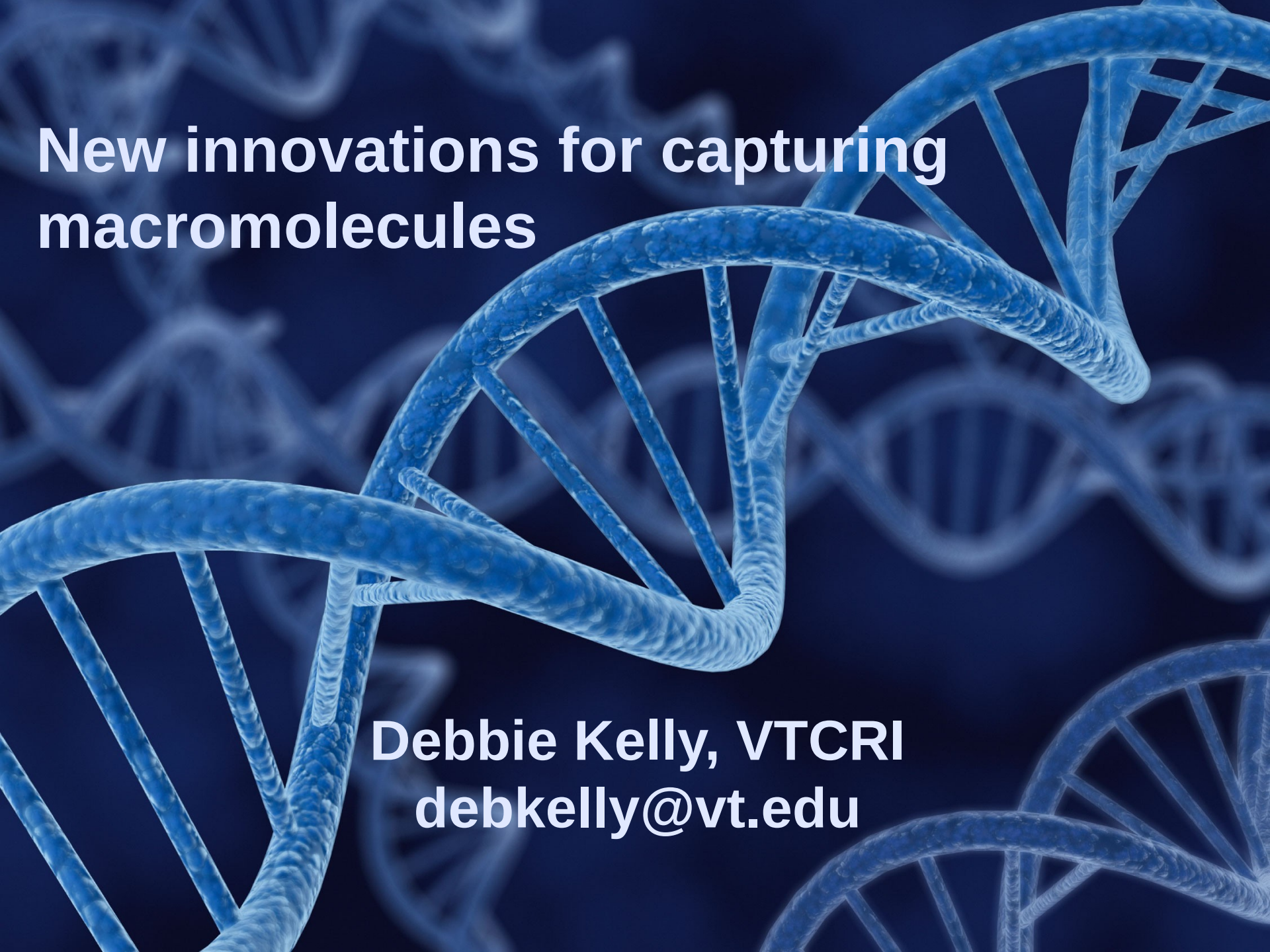
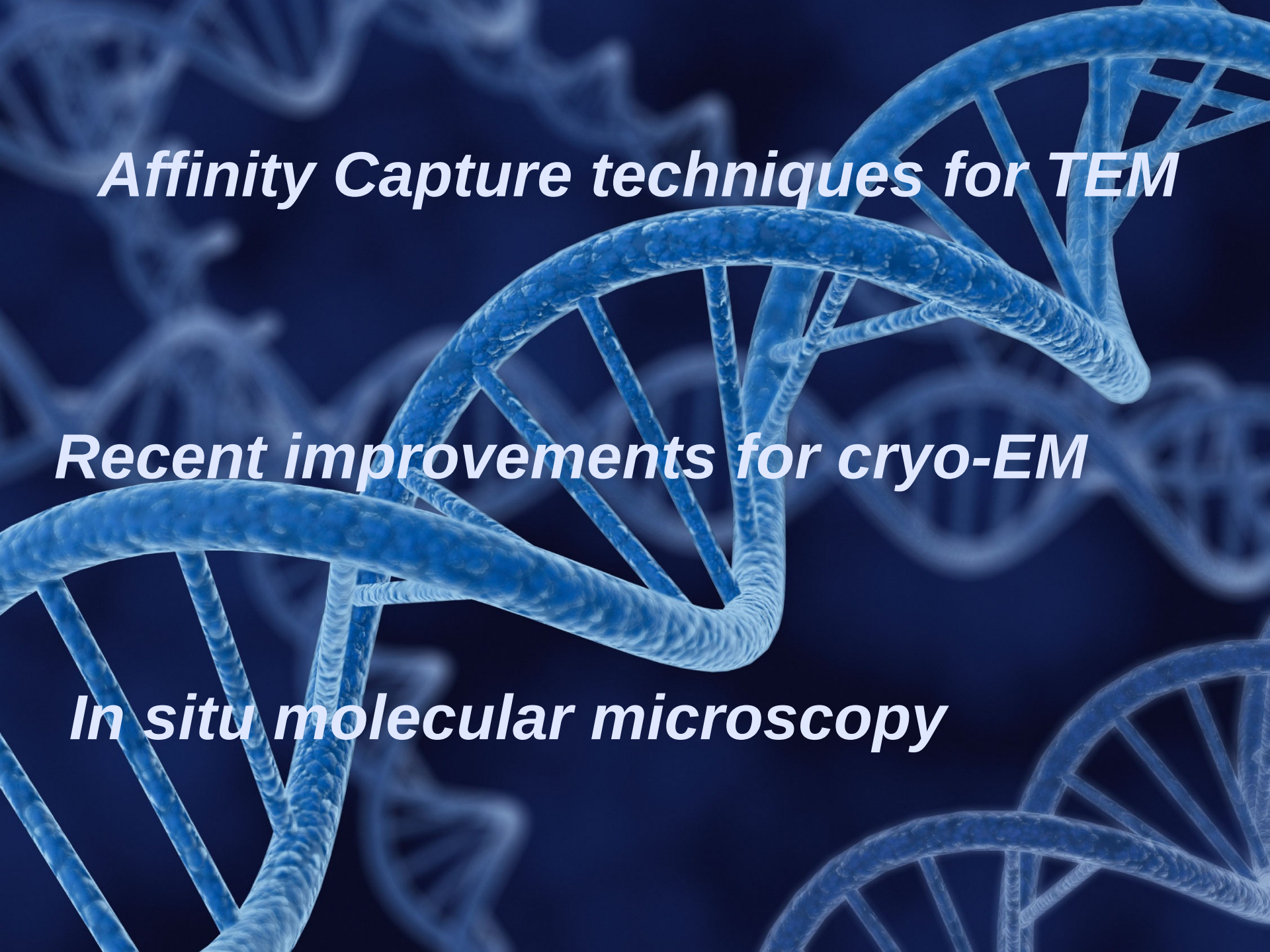
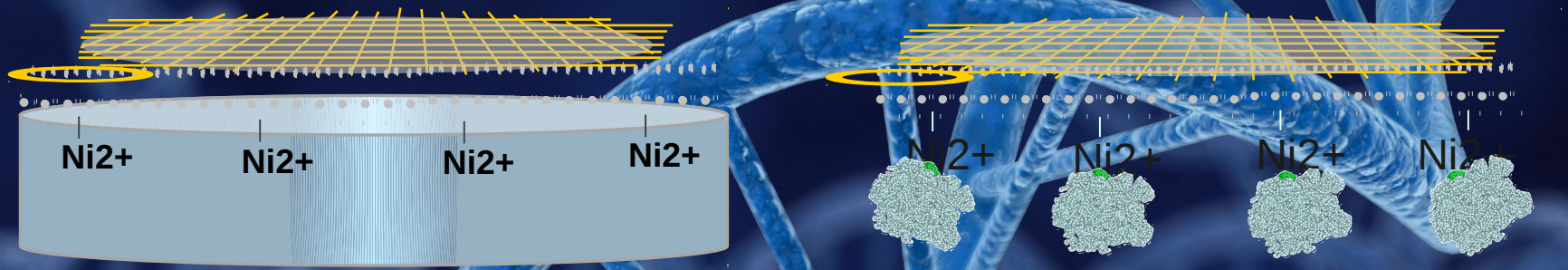
New innovations for capturing macromolecules

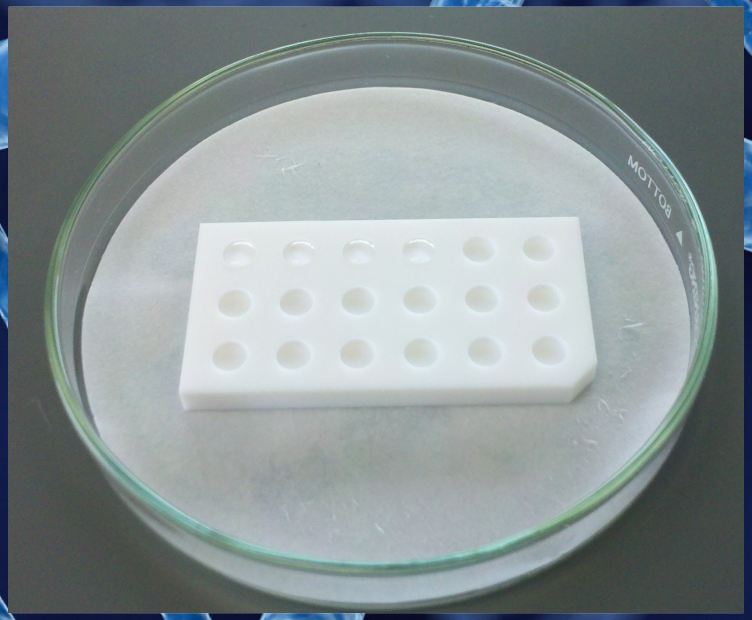


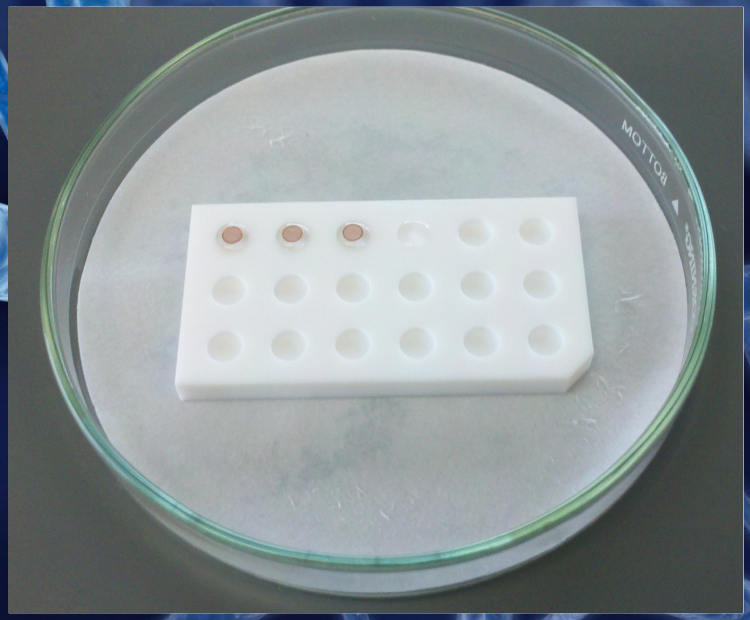
Debbie Kelly, VTCRI
debkelly@vt.edu


Affinity Capture techniques for TEM
Recent improvements for cryo-EM
In situ molecular microscopy

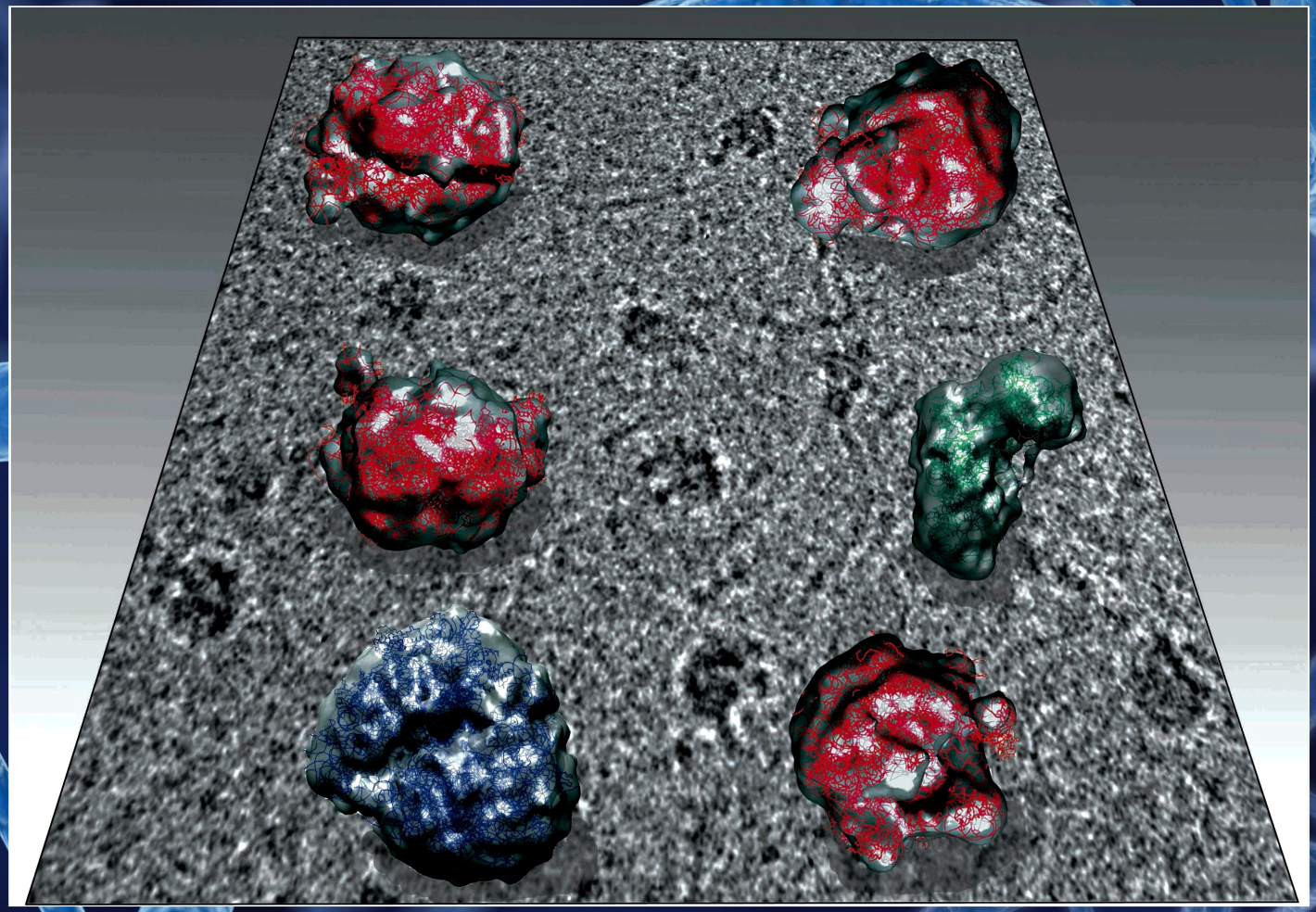
Affinity Capture approach





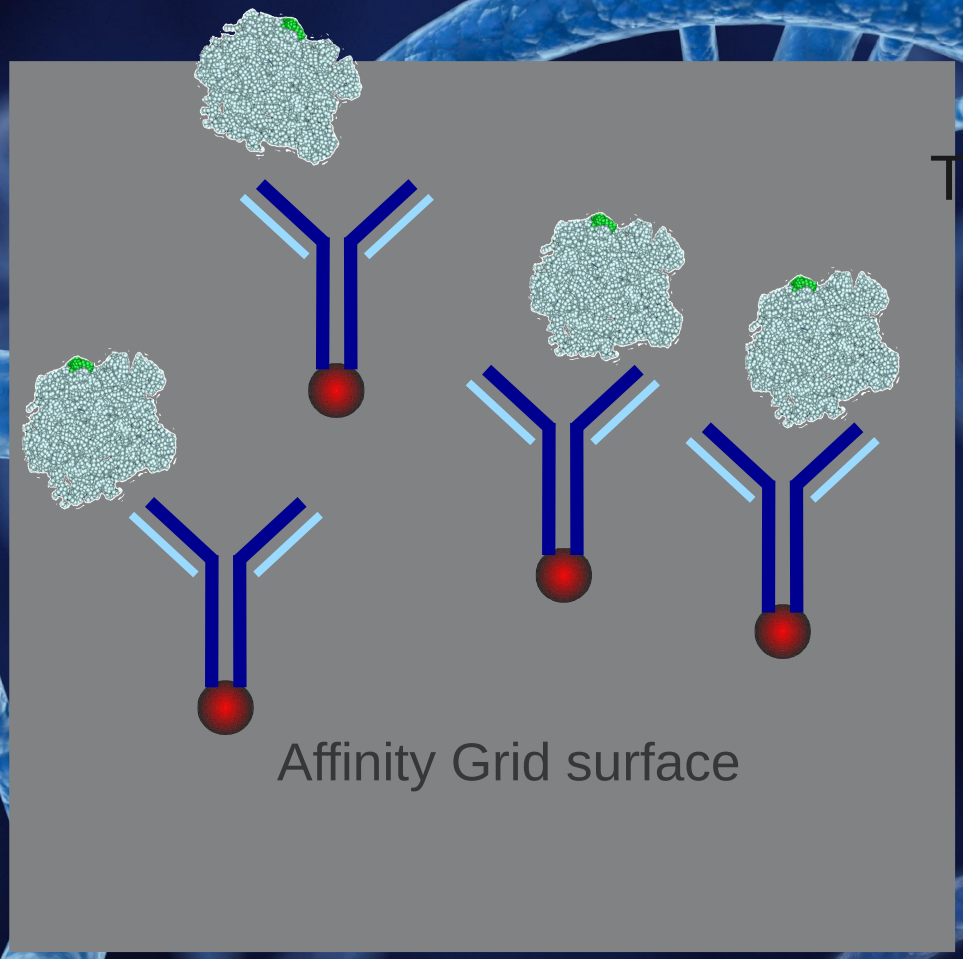


Active ribosomal complexes



Kelly *et al*., *JMB* (2008)

Versatile nanopurification system

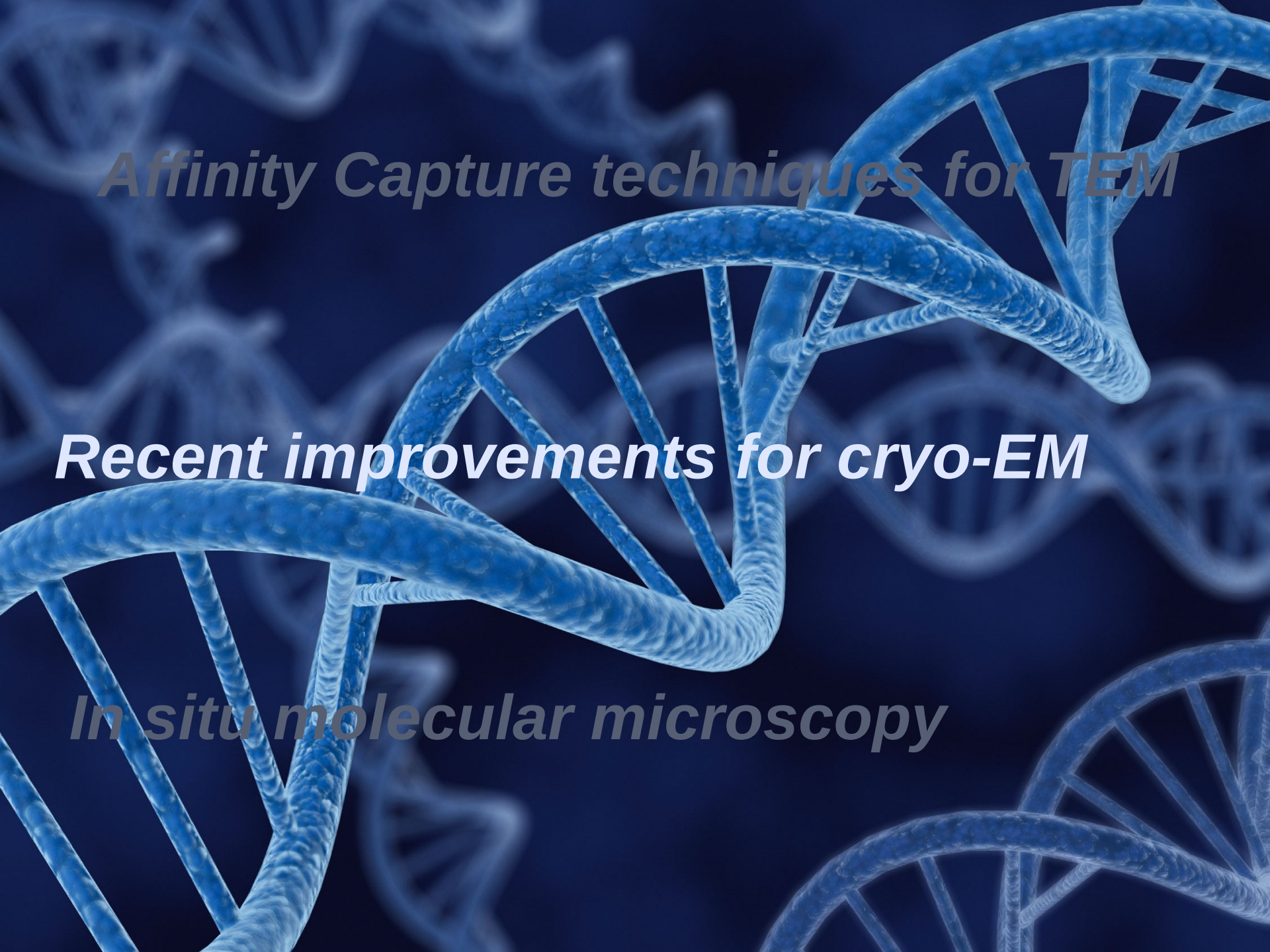


Target Complex

Antibodies

His Protein A

Kelly *et al*., Methods in Enzymology (2010)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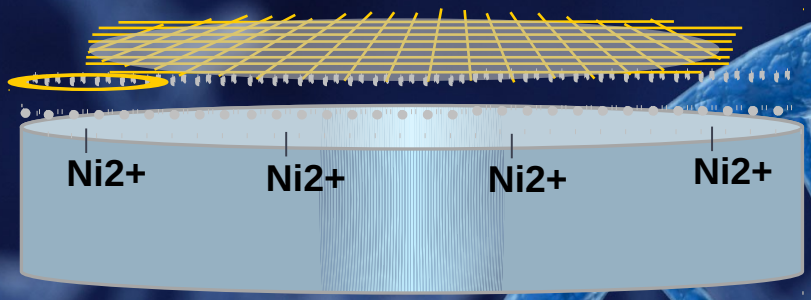
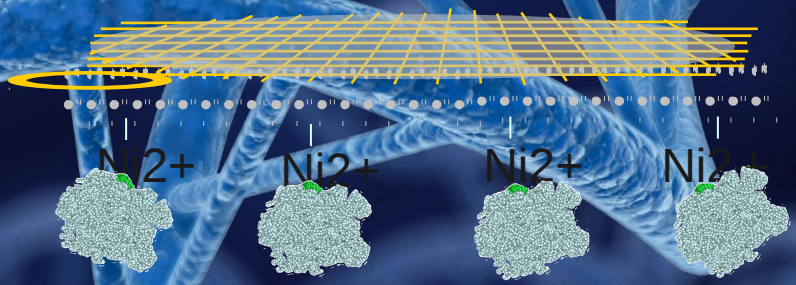
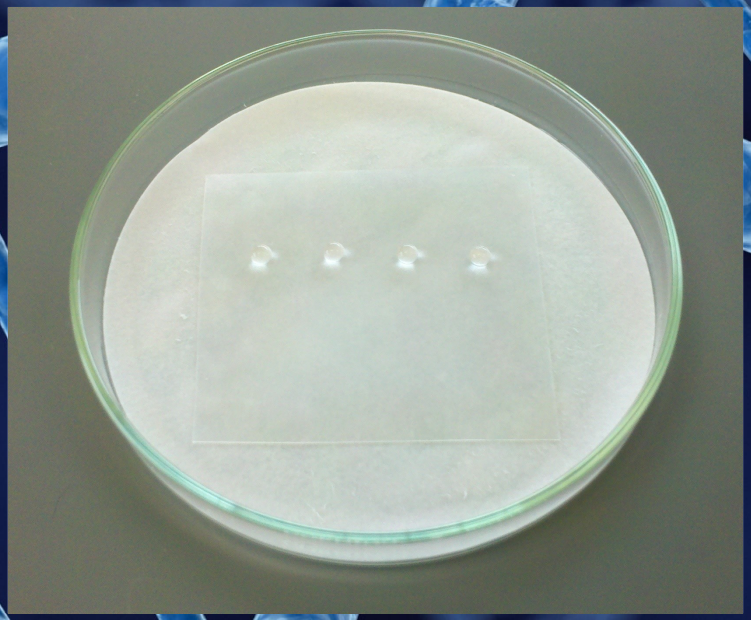
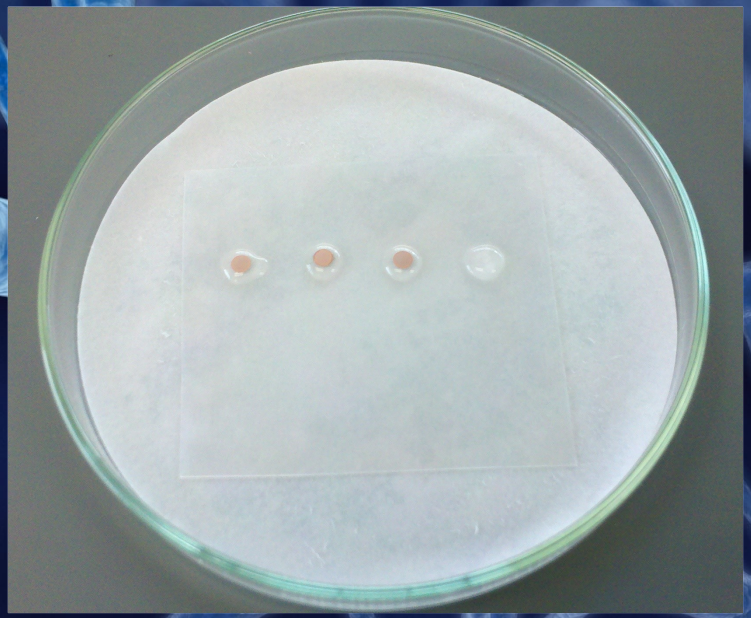
Improved lipid transfer step



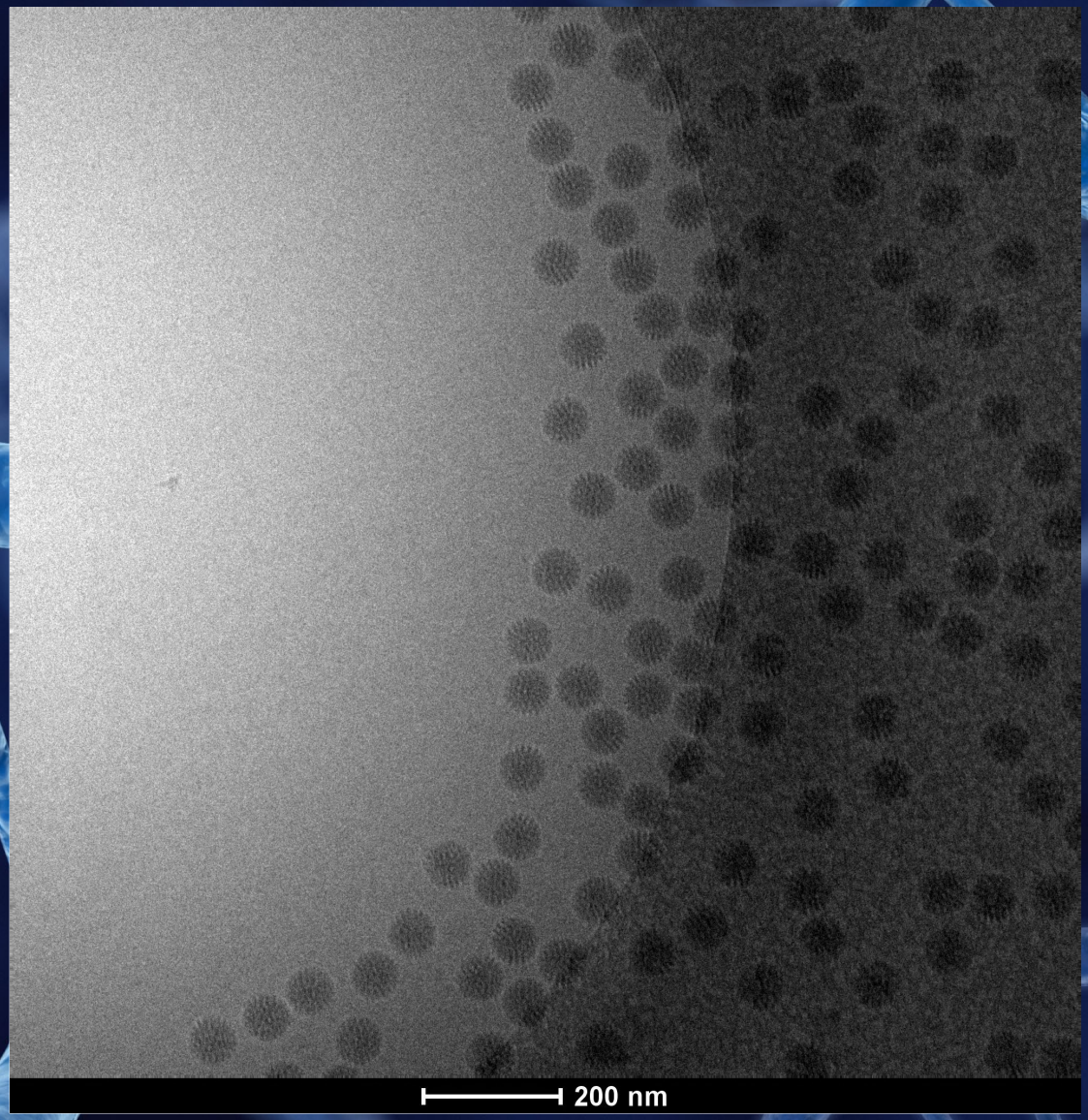




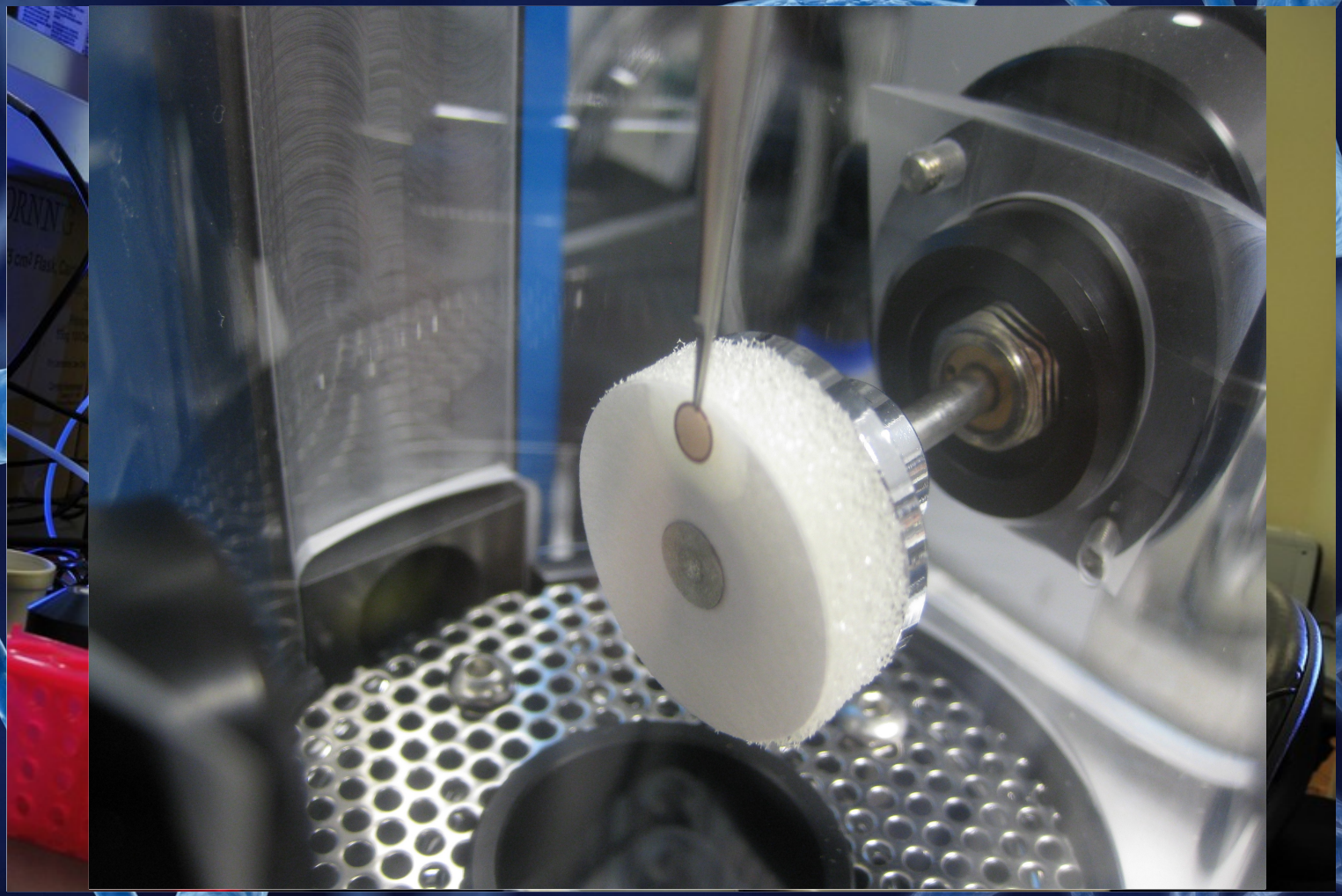


Affinity Grid Workshop (2012)

Viral mechanisms

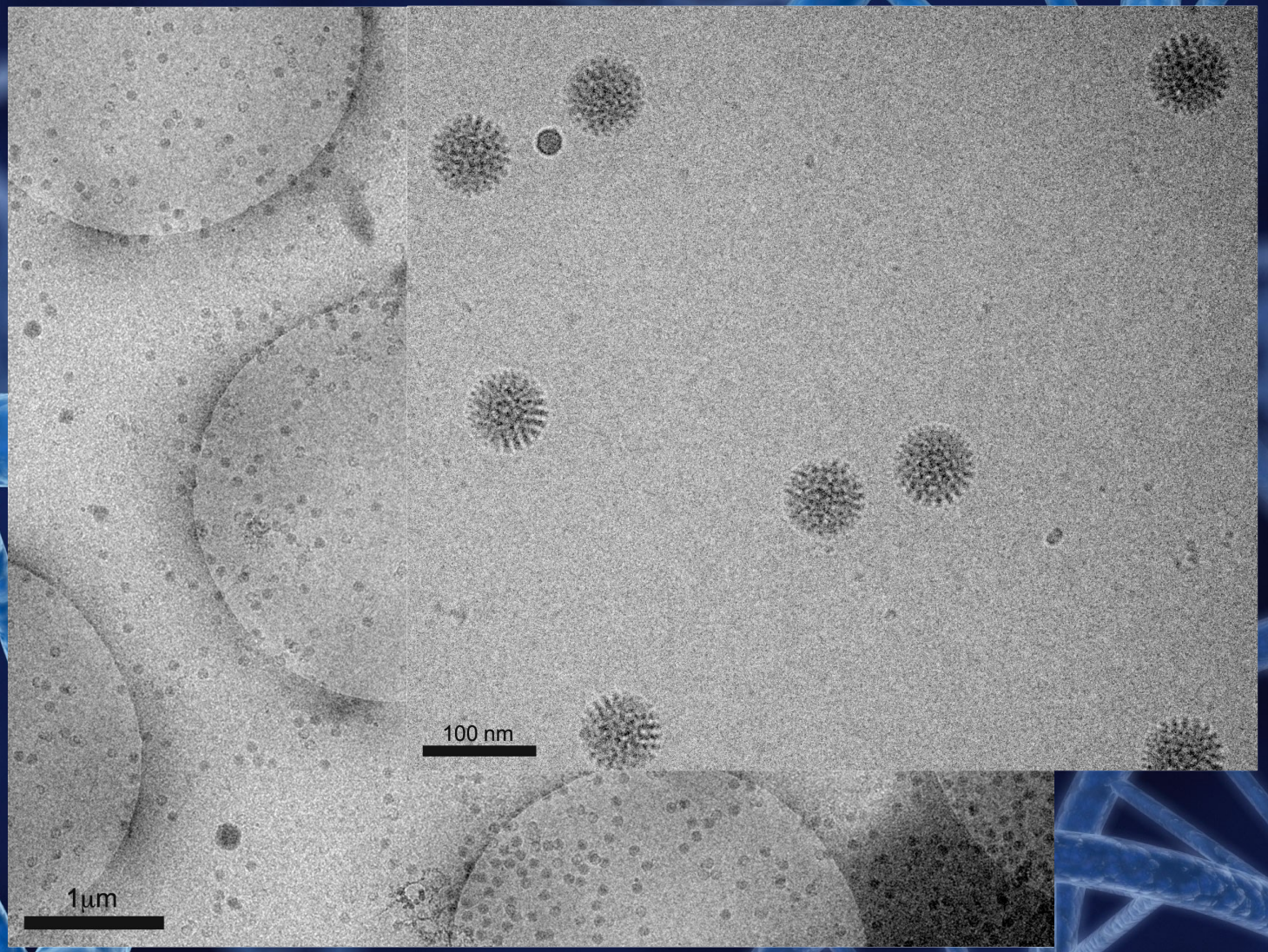


Gentle Blot™ using the Gatan CP3



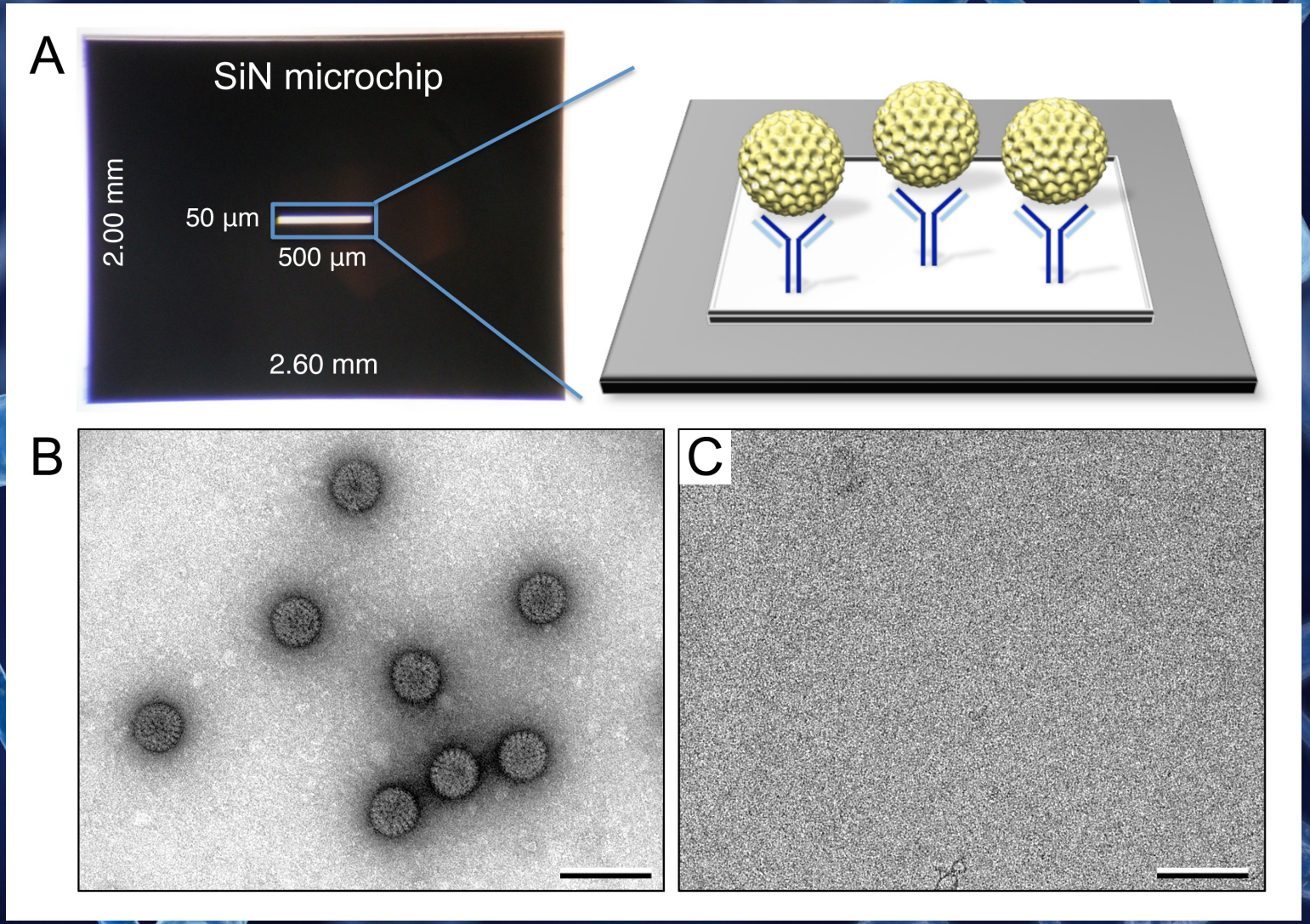
Tanner *et al*., (in preparation)

Affinity Capture with CP3-GB



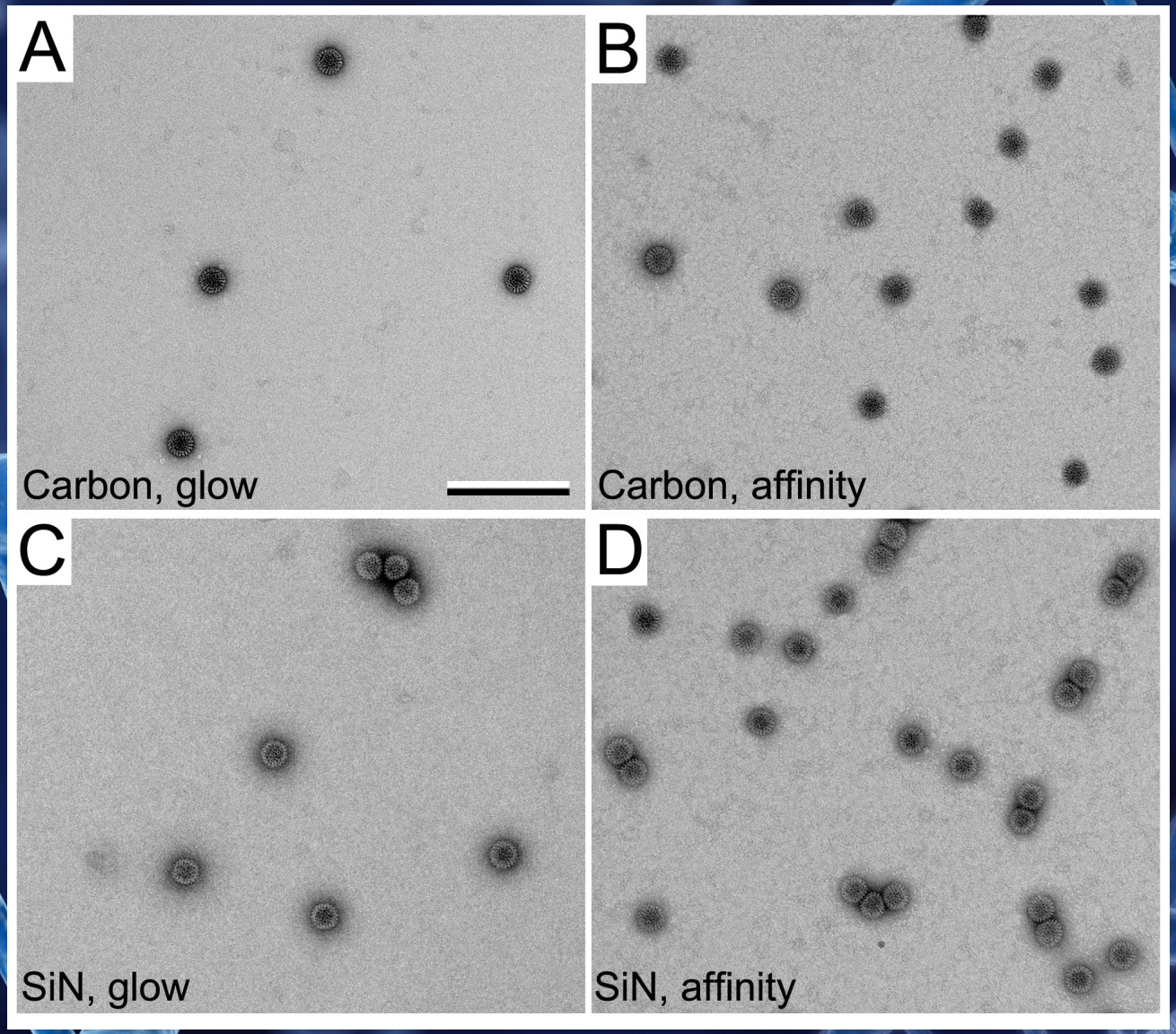
Tanner *et al*., (in preparation)

Silicon Nitride – alternative surface

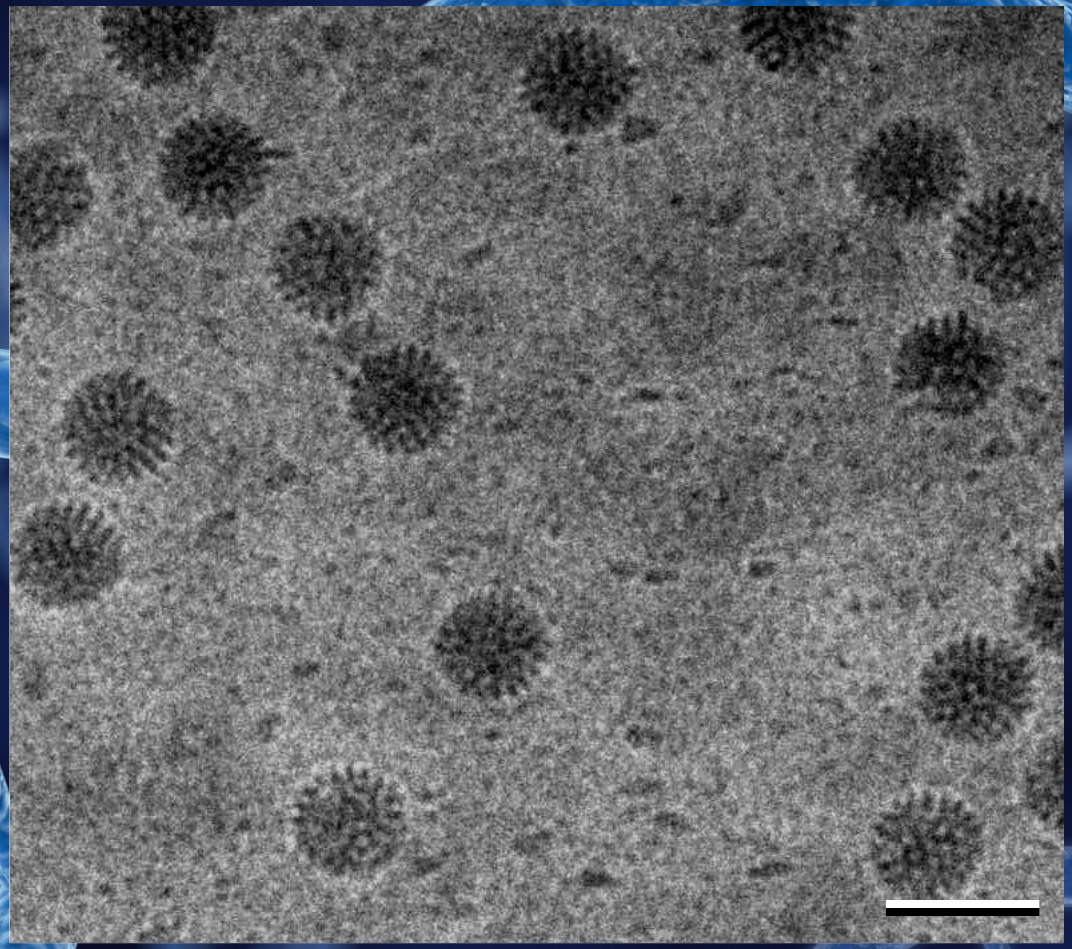


Gilmore *et al*., submitted

SiN vs Carbon film



Cryo-EM on SiN

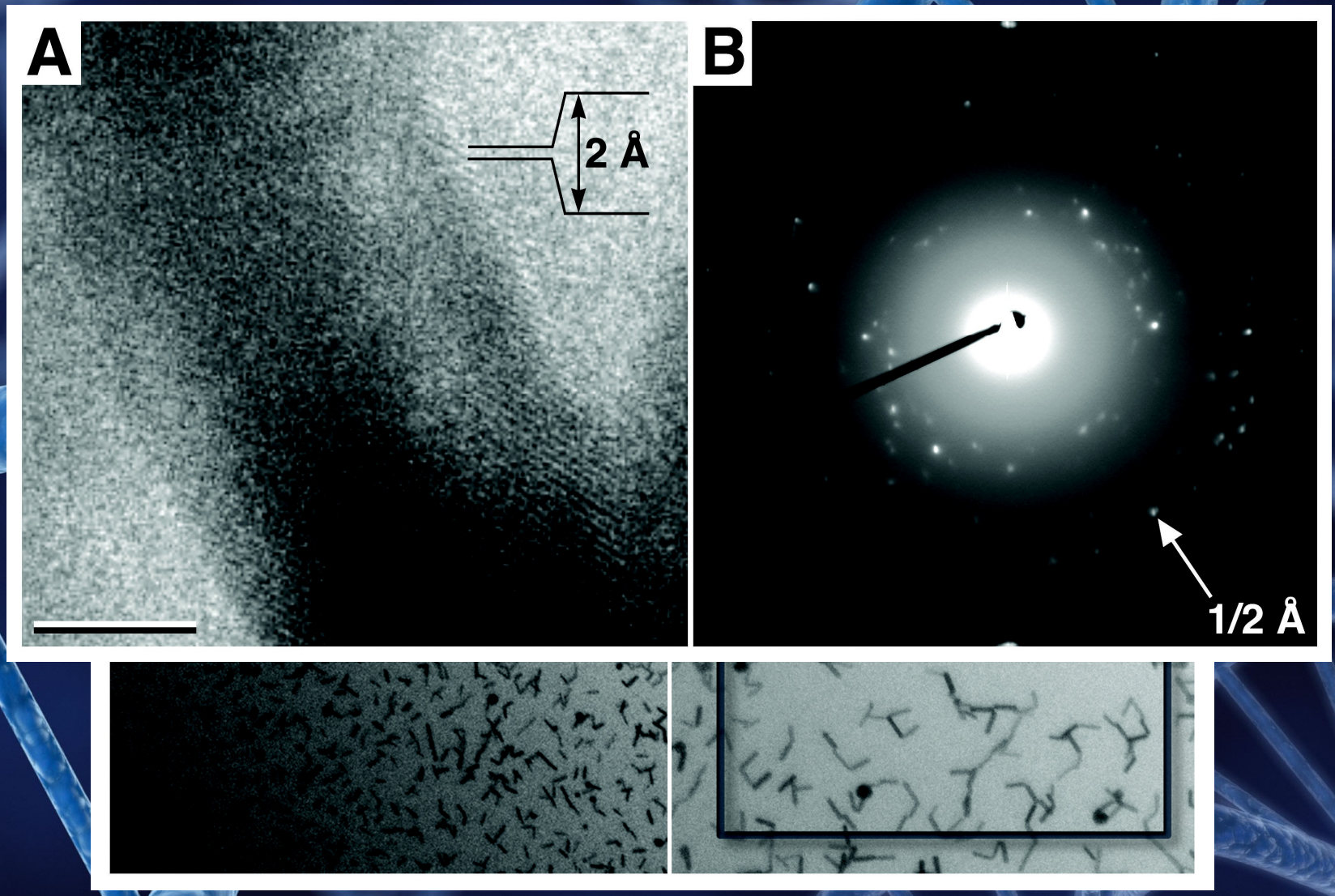


In situ TEM – Poseidon system

Maintain biological entities in liquid

Images of liquid specimens

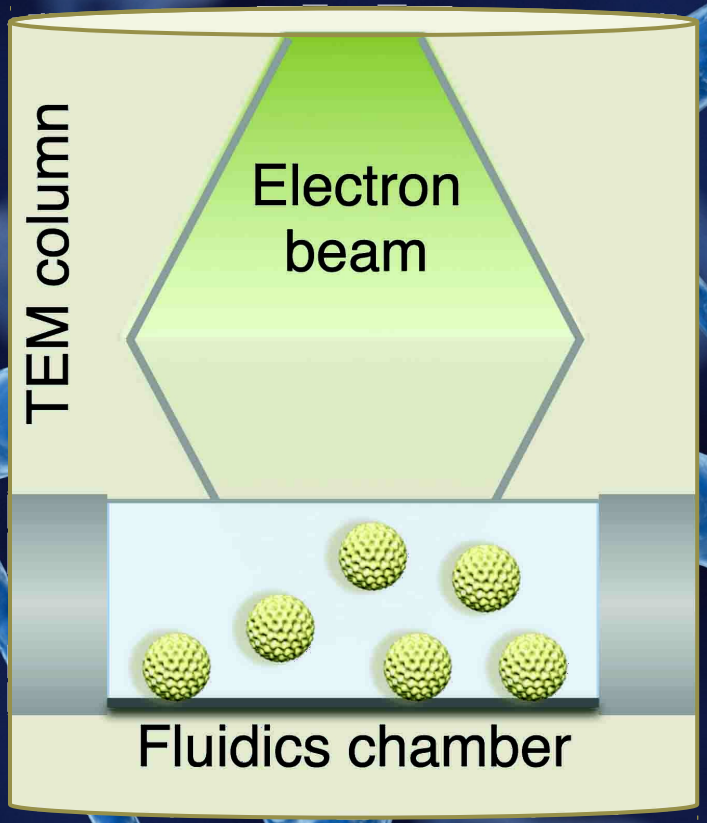
TEM imaging in liquid



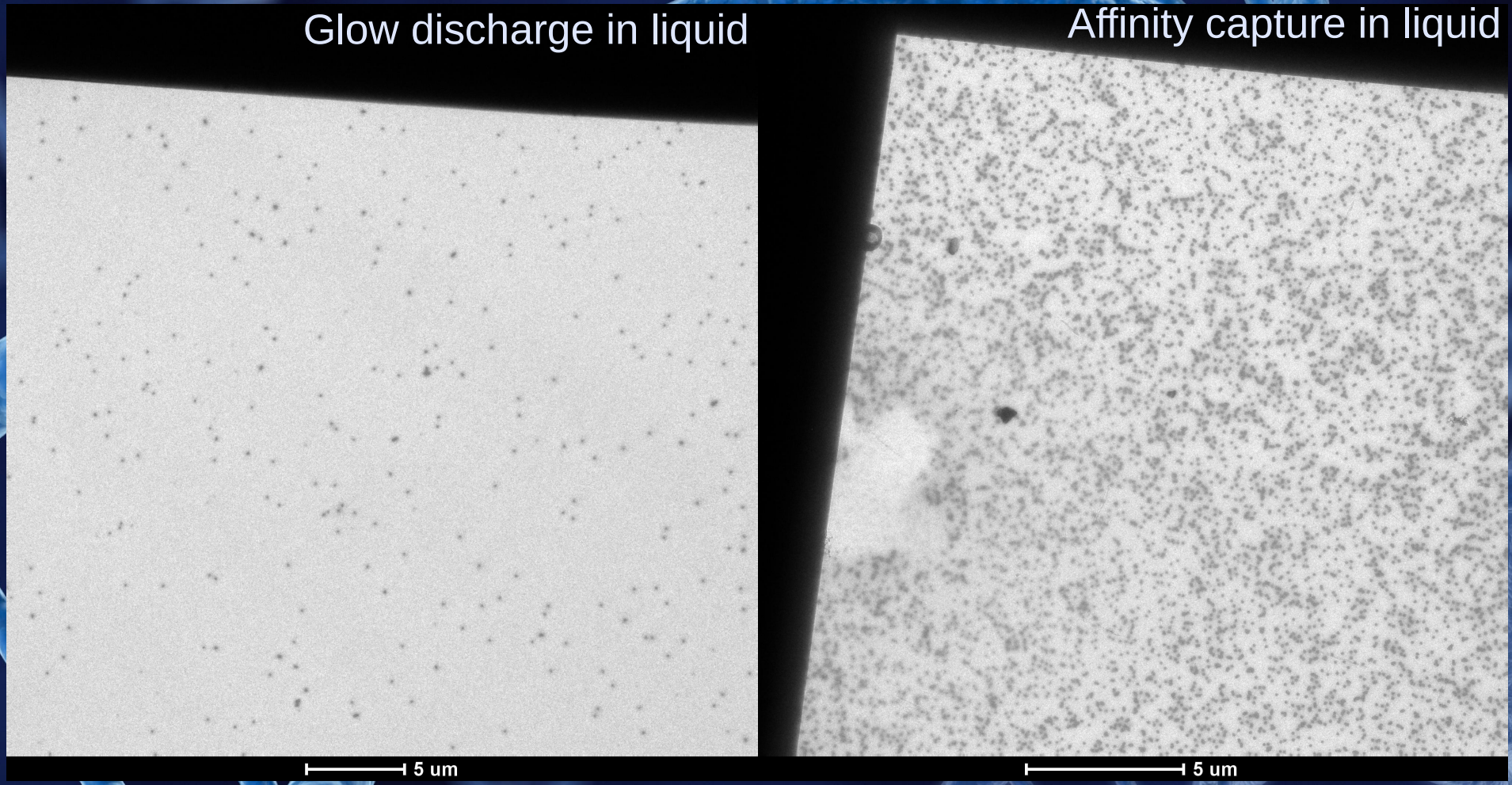
Dukes *et al*., submitted

Nanoscale Tidal Waves

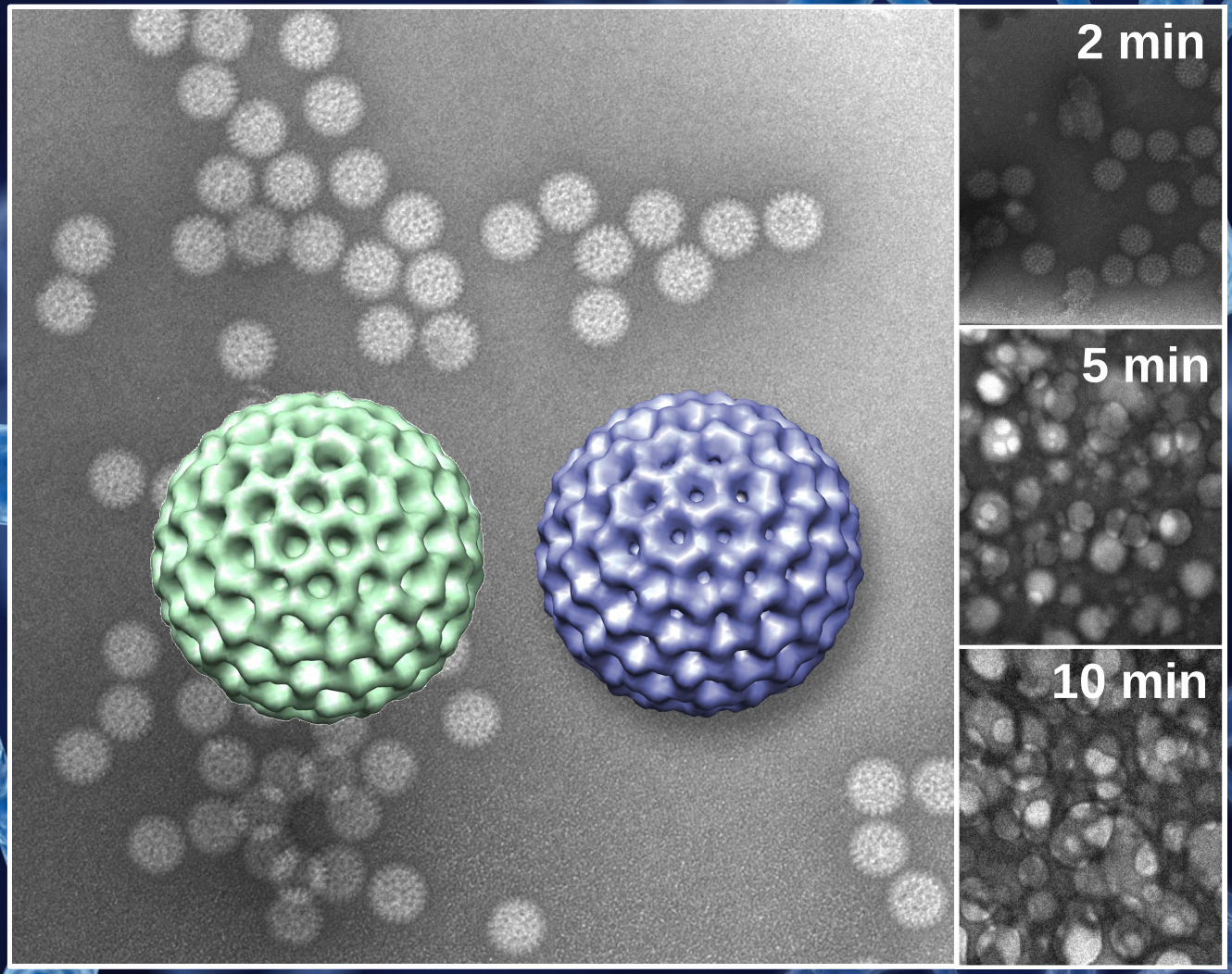
In situ molecular microscopy



In situ molecular microscopy

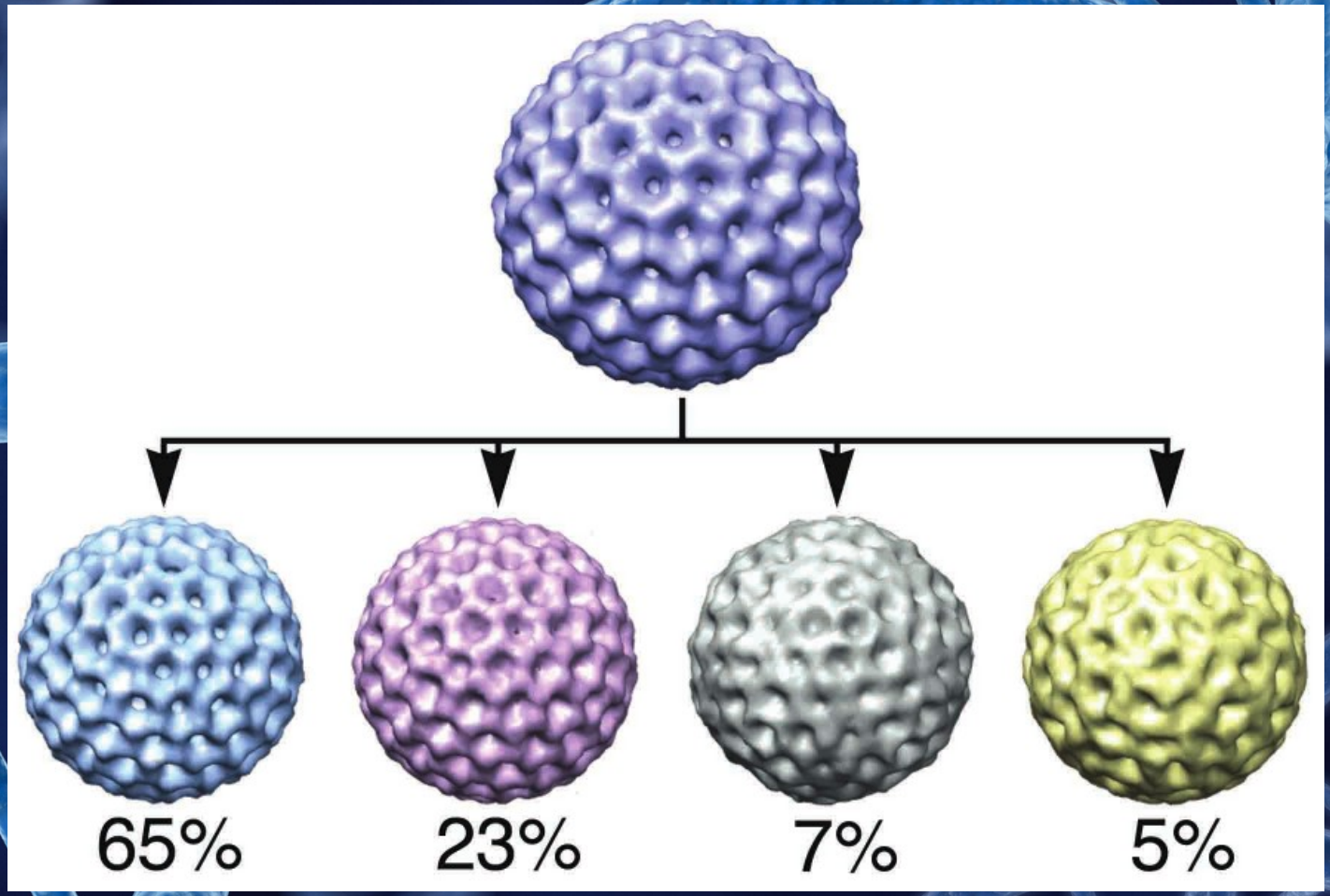


DLPs in liquid

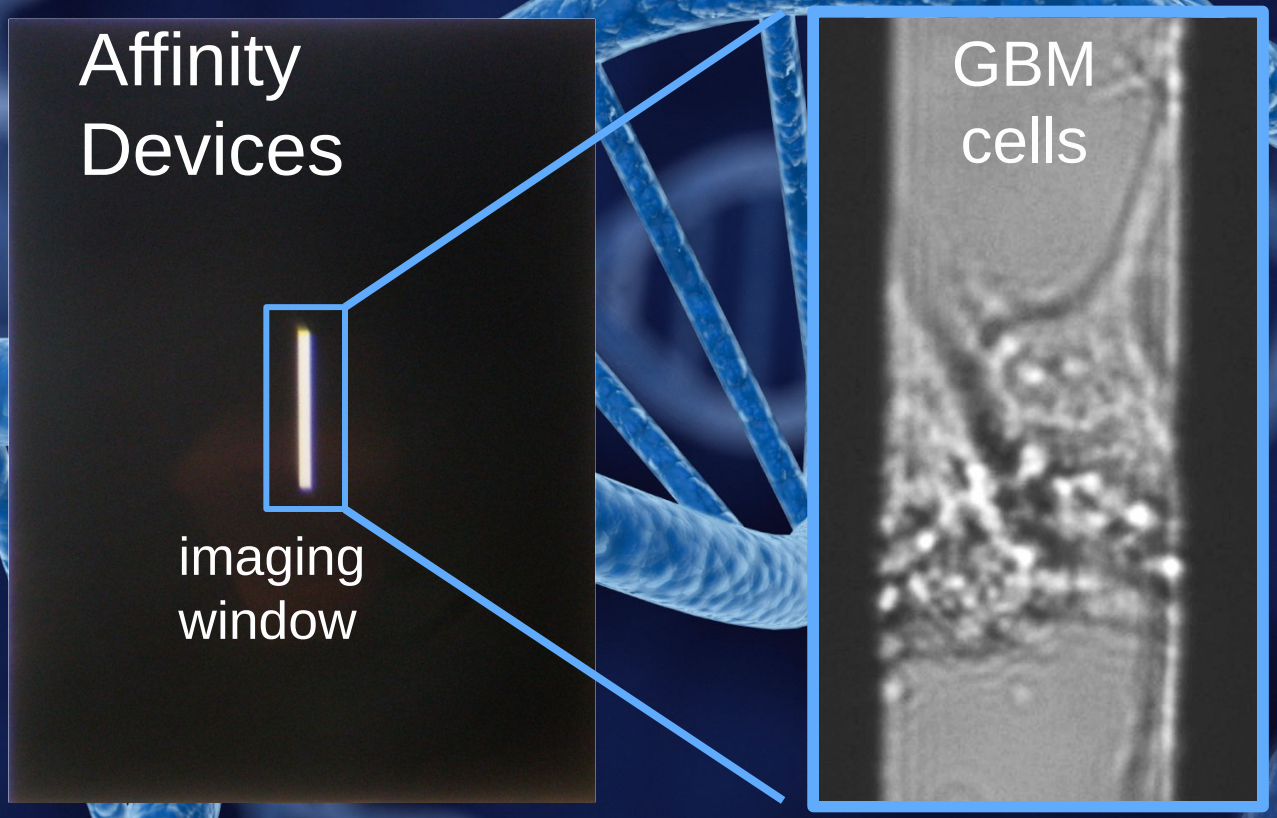


Gilmore *et al*., in revision

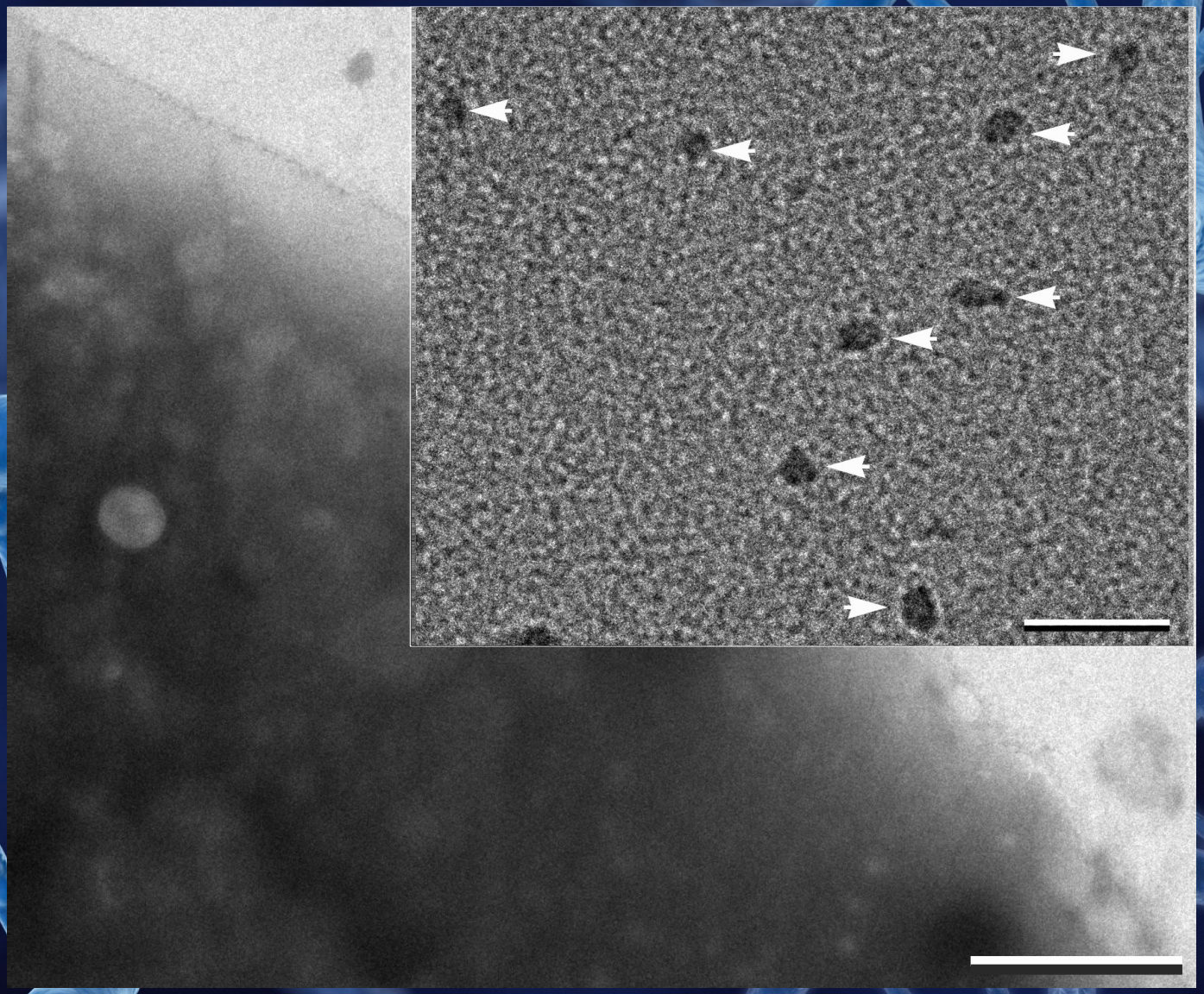
Heterogeneous DLPs in solution



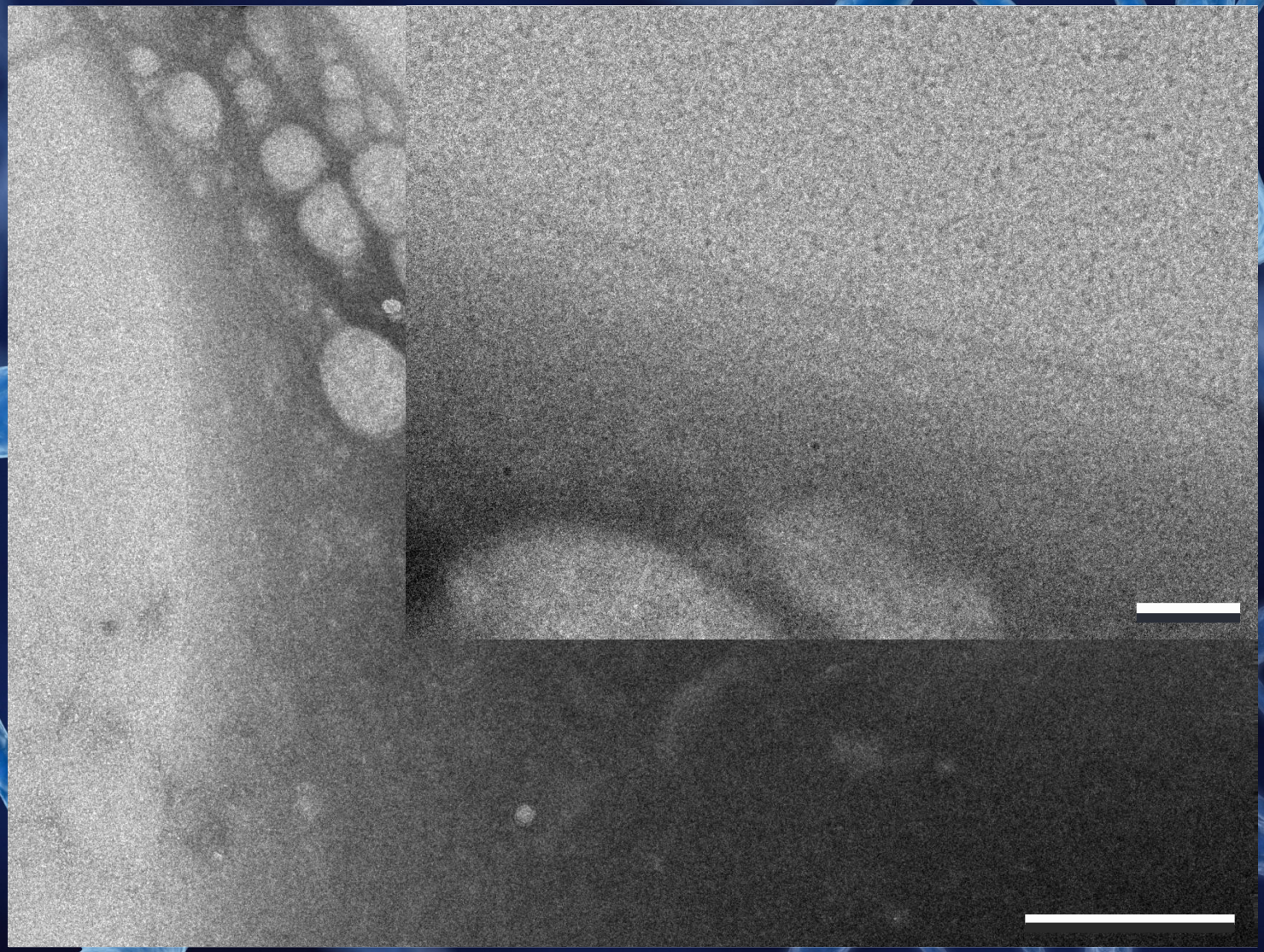
From protein machinery to whole cells



Cancer cells treated with theranostics



Cancer cells lacking theranostics



New tools for molecular & cellular imaging

Affinity Capture technology can improve specimen preparation in ice and in liquid

SiN may serve as a multipurpose substrate for TEM

Wide applications in cancer and infectious disease

Acknowledgements

- Kelly Lab research team
  - Justin Tanner
  - Brian Gilmore
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- http://debkellylab.org/