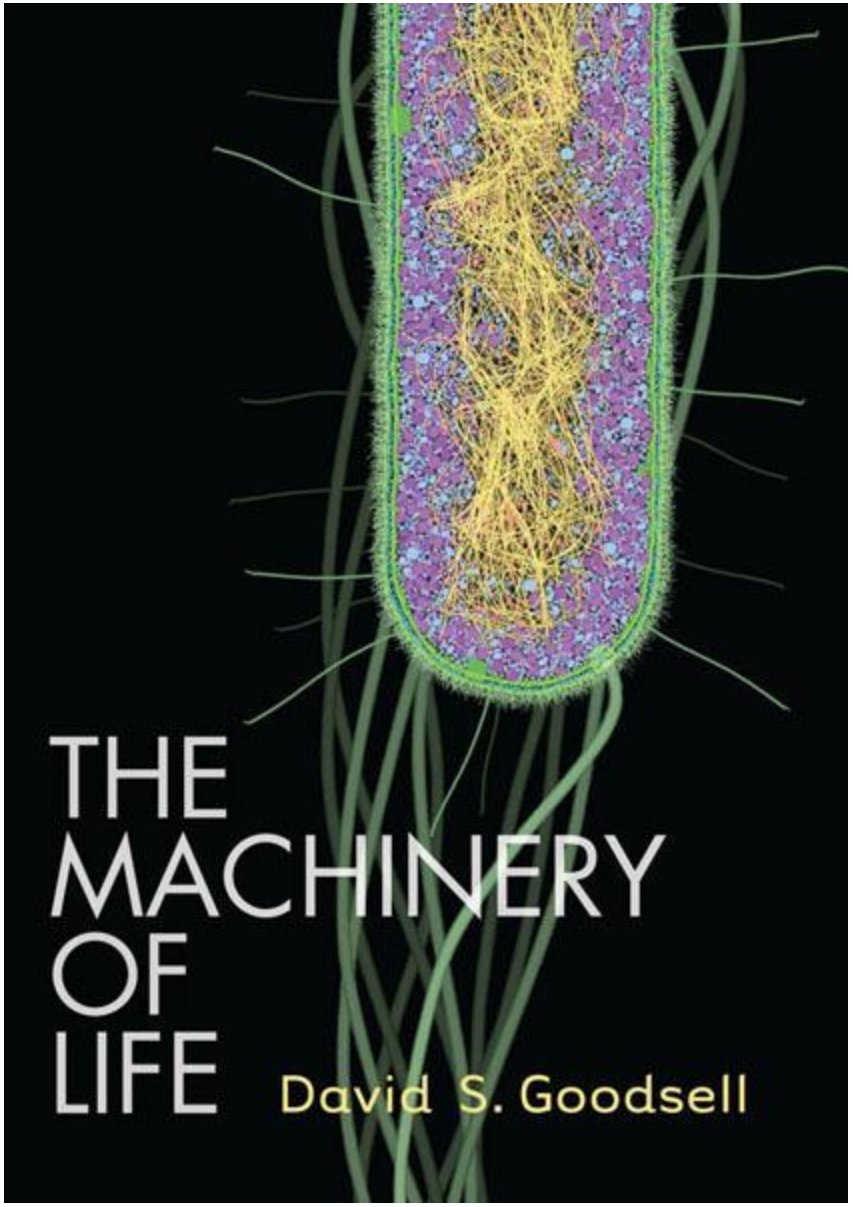
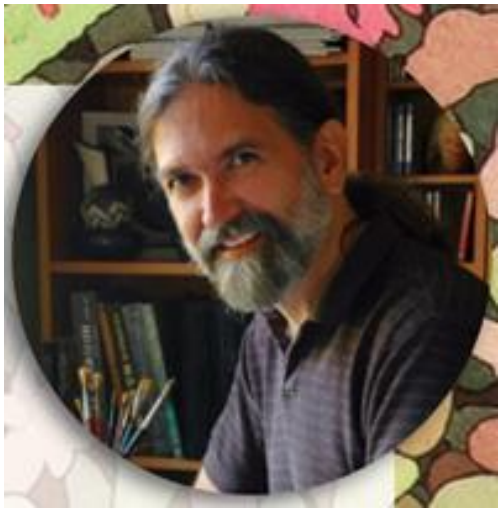
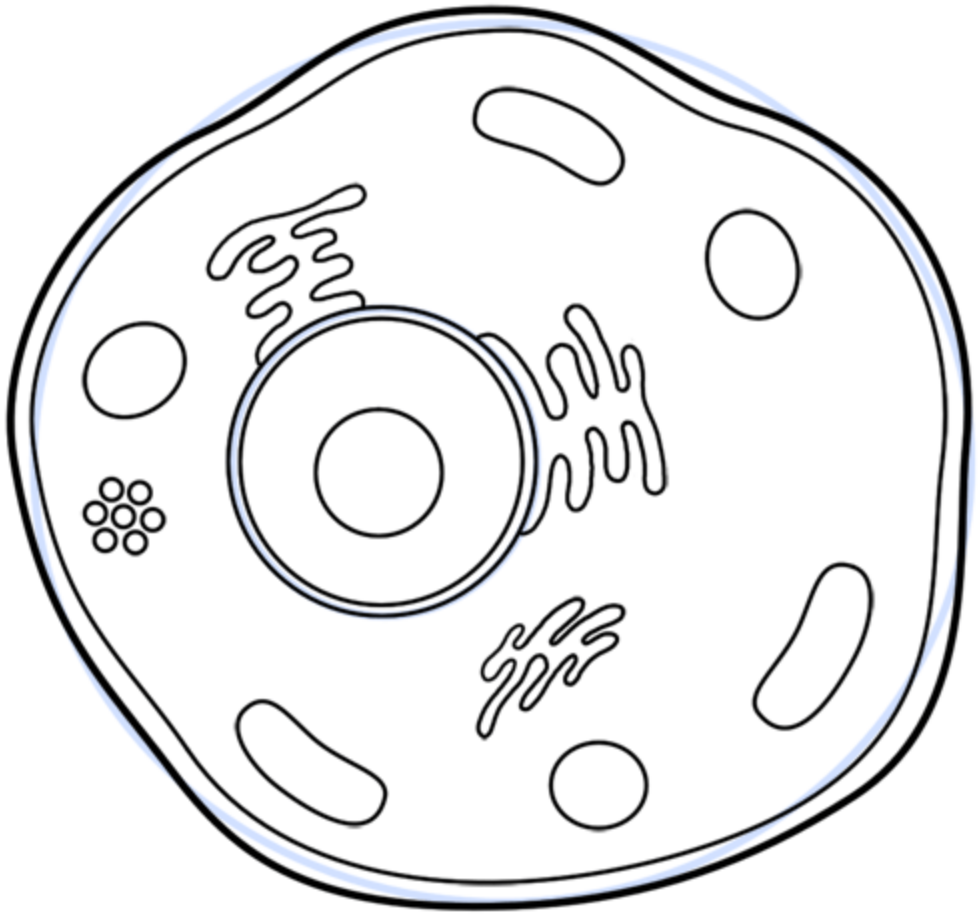


David Goodsell

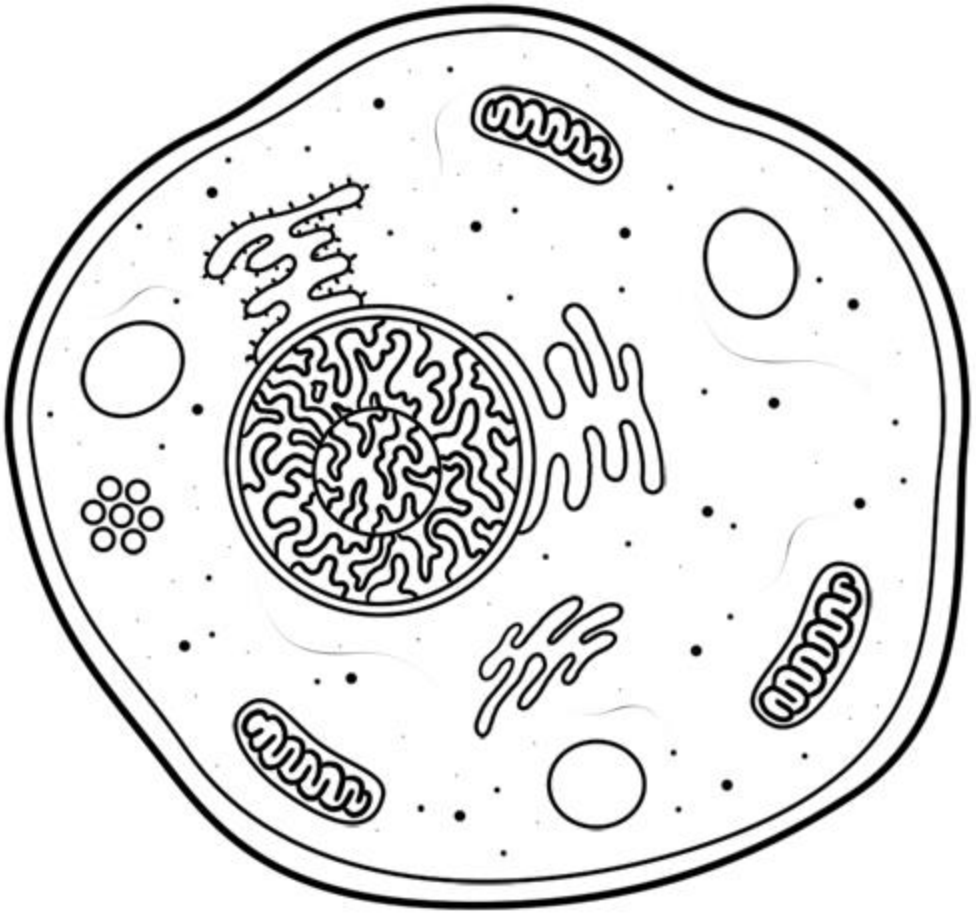
Scripps Research institute

Scientist… Author… and
Artist of all things small.

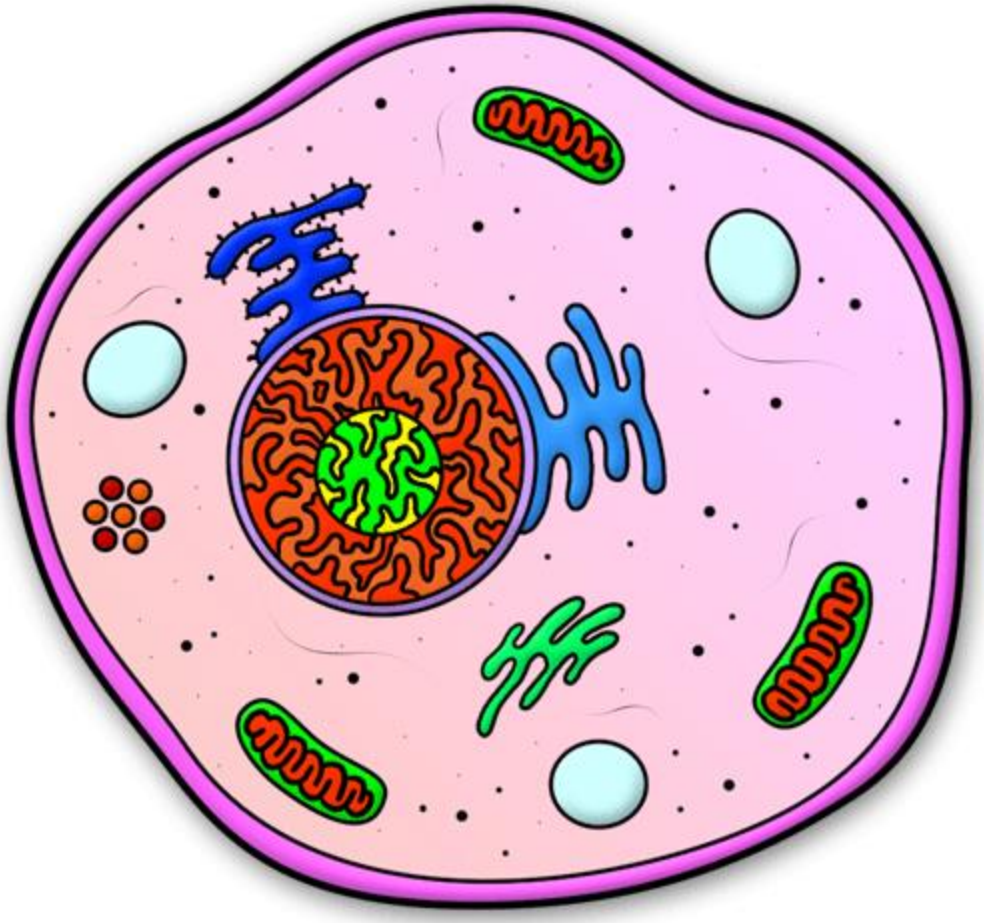




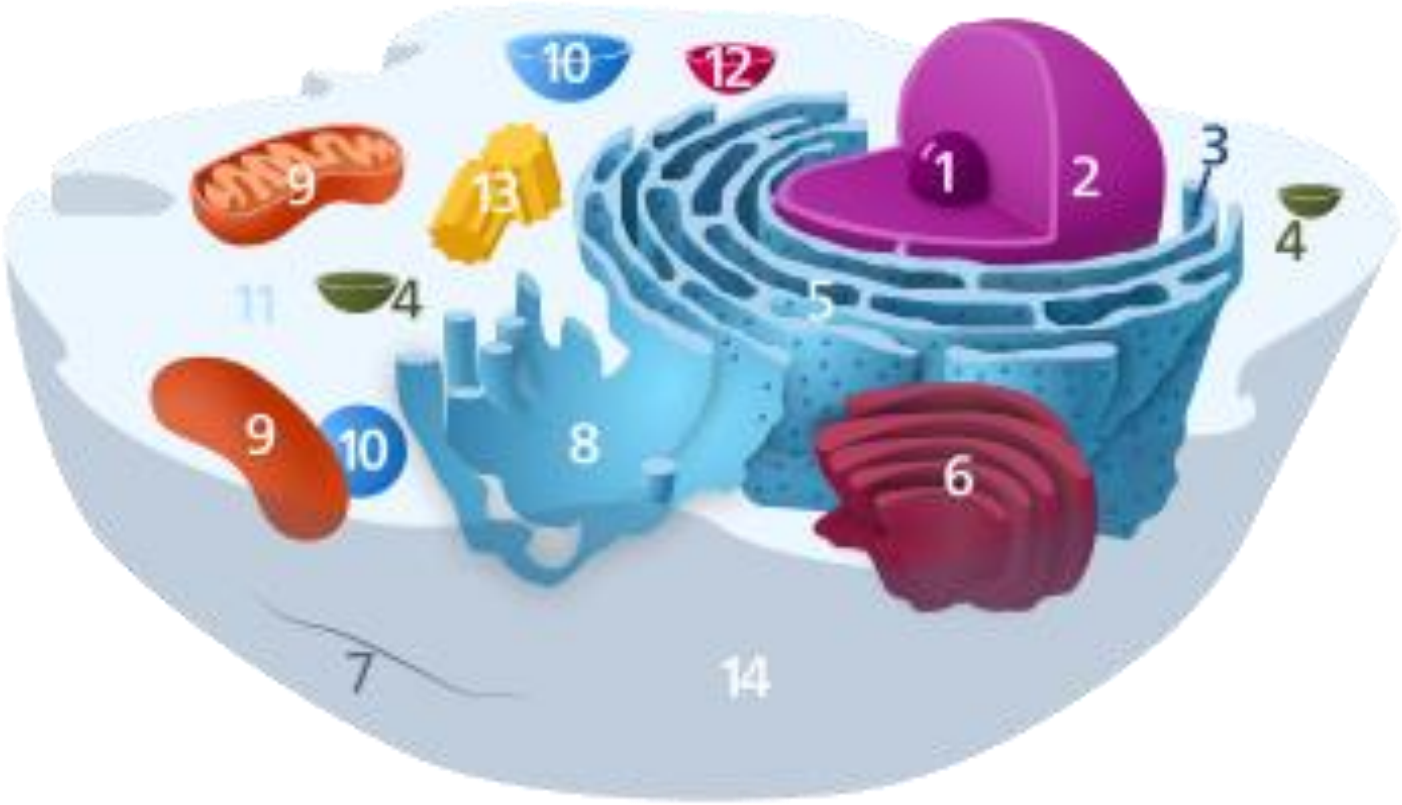
And finally… finish it off with lots of little details …..



- thus completing the **cytoplasm**

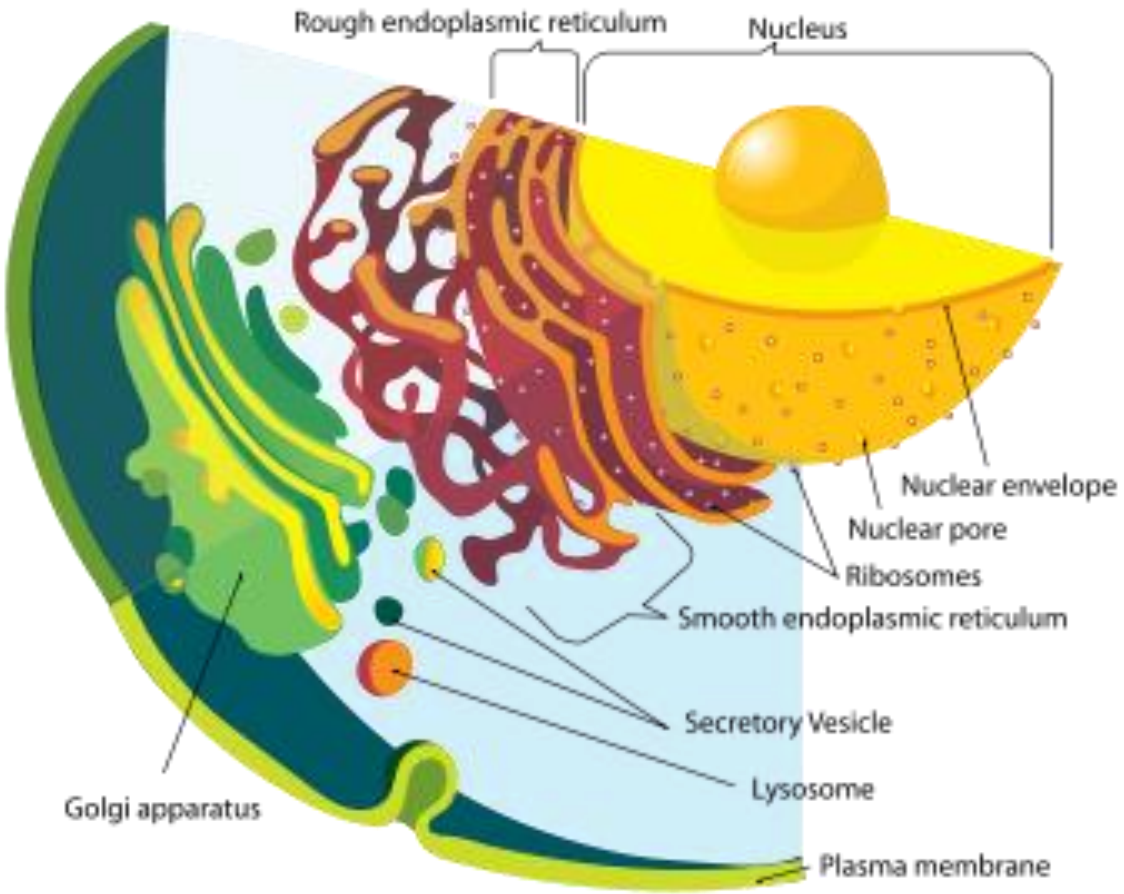


And you're done!



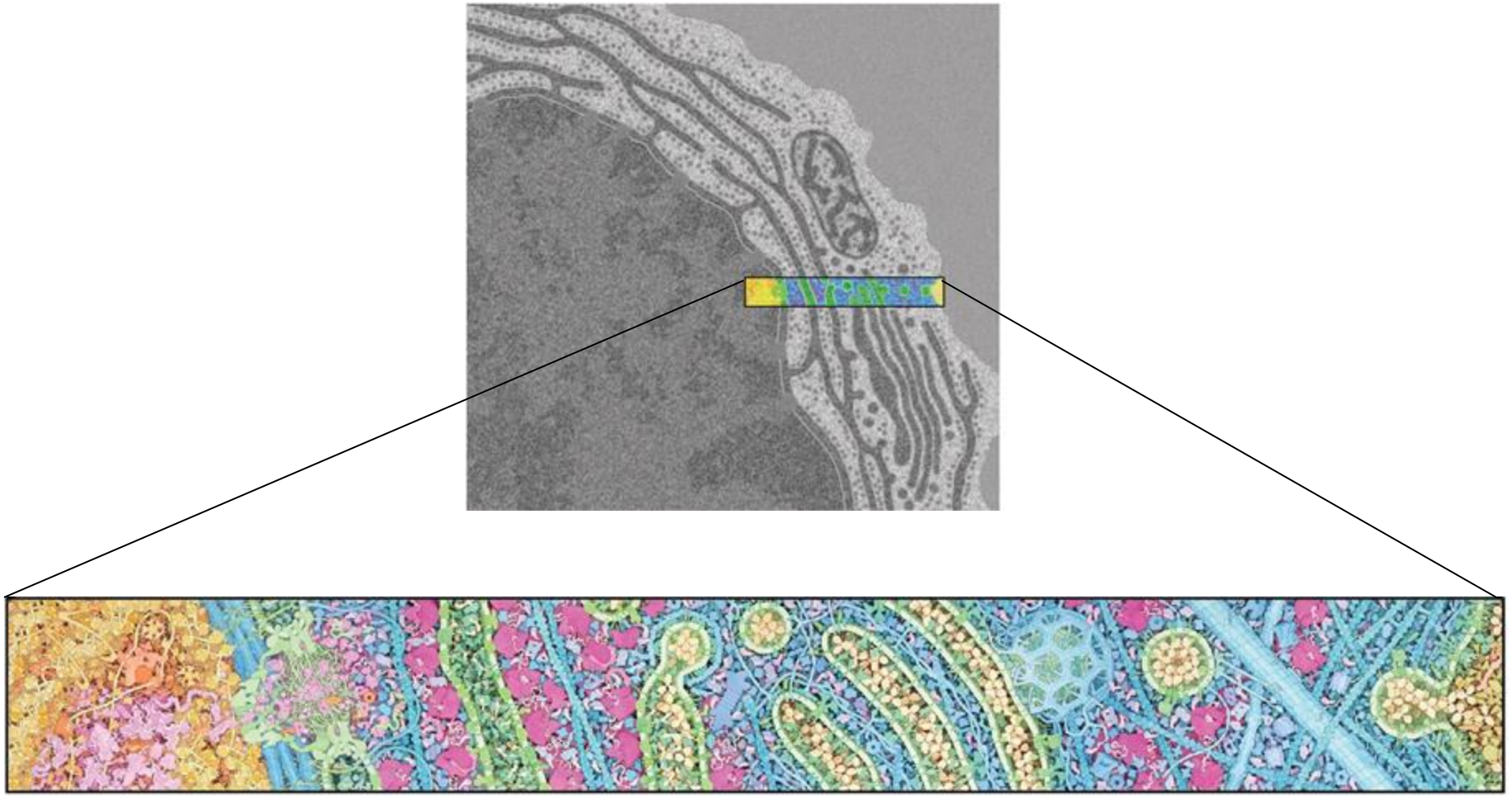
1. Nucleolus
2. Nucleus
3. Ribosome
4. Vesicle
5. Rough Endoplasmic reticulum
6. Golgi Apparatus
7. Cytoskeleton
8. Smooth E.R.
9. Mitochondria
10. Vacuole
11. Cytosol
12. Lysosome

http://en.wikipedia.org/wiki/File:Animal_Cell.svg



http://en.wikipedia.org/wiki/Animal_cell

An electron micrograph of an antibody-producing B-cell



Your recent flu shot… in action.

Article

Miniseries: Illustrating the Machinery of Life

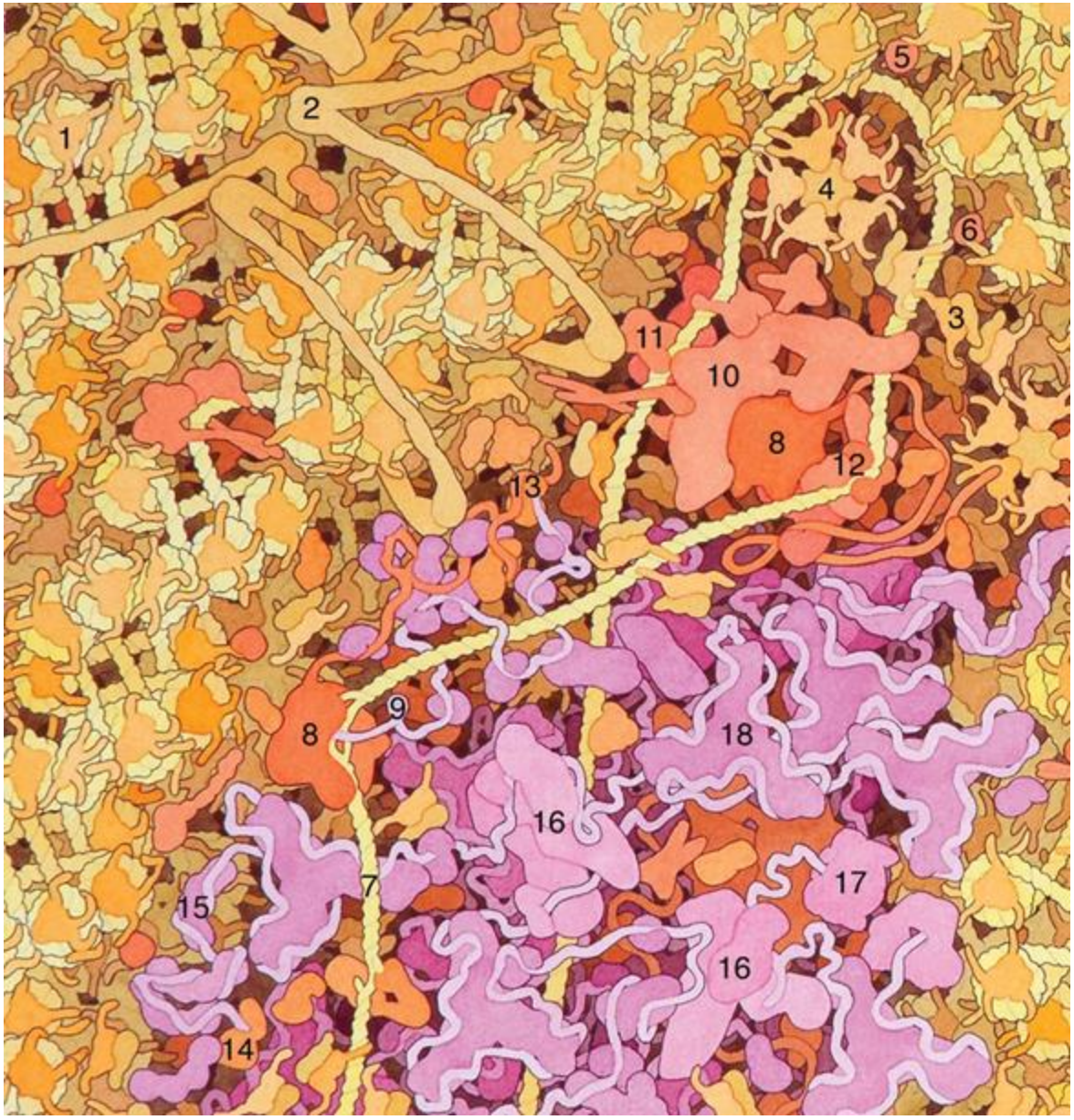
Eukaryotic Cell Panorama

Received for publication, October 7, 2010, and in revised form, December 13, 2010

David S. Goodsell‡

From the Department of Molecular Biology, The Scripps Research Institute, La Jolla, CA 92102

Diverse biological data may be used to create illustrations of molecules in their cellular context. This report describes the scientific results that support an illustration of a eukaryotic cell, enlarged by one million times to show the distribution and arrangement of macromolecules. The panoramic cross section includes eight panels that extend from the nucleus to the cell surface, showing the process of protein synthesis and export. Results from biochemistry, electron microscopy, NMR spectroscopy and x-ray crystallography were used to create the image.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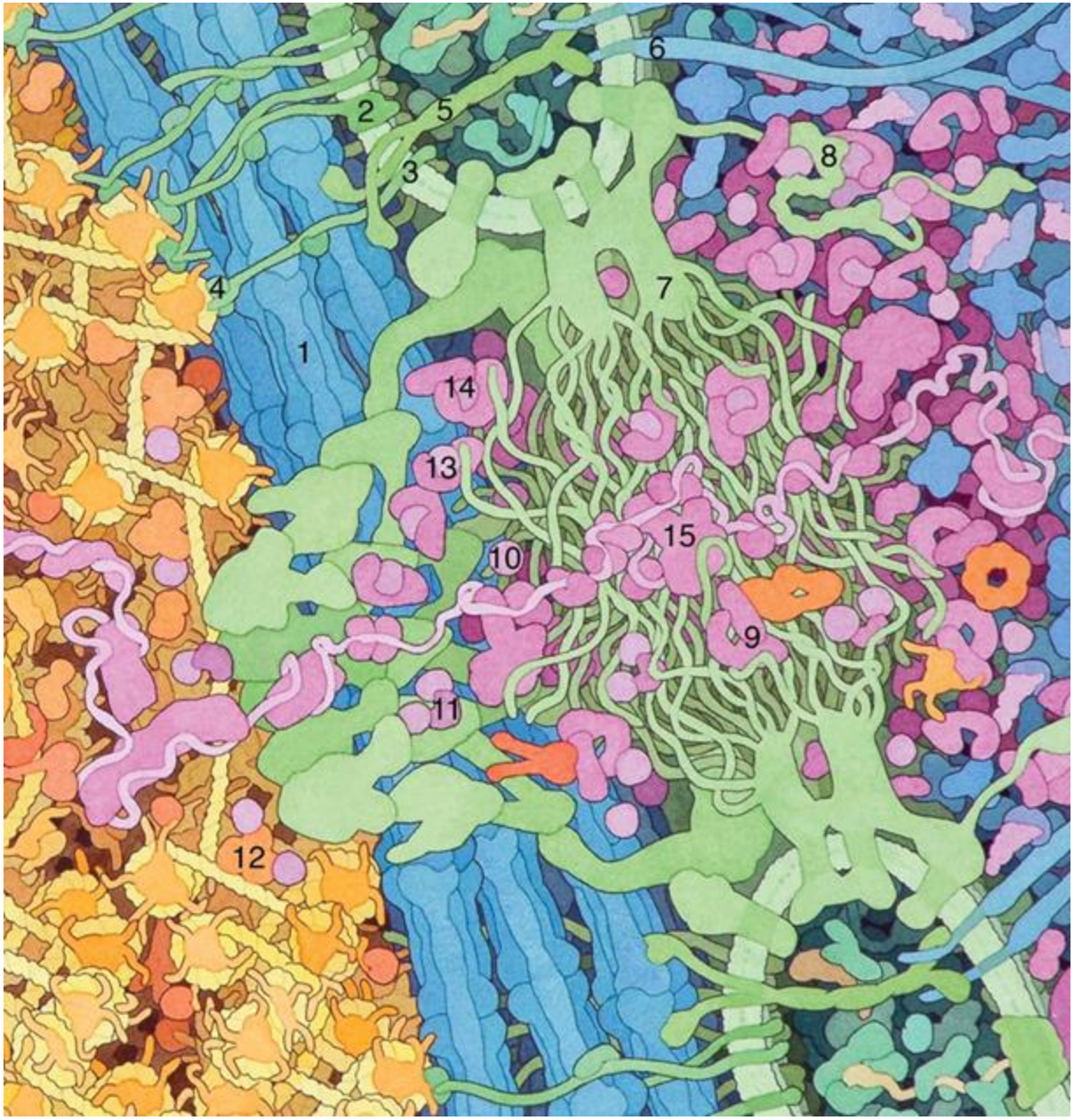
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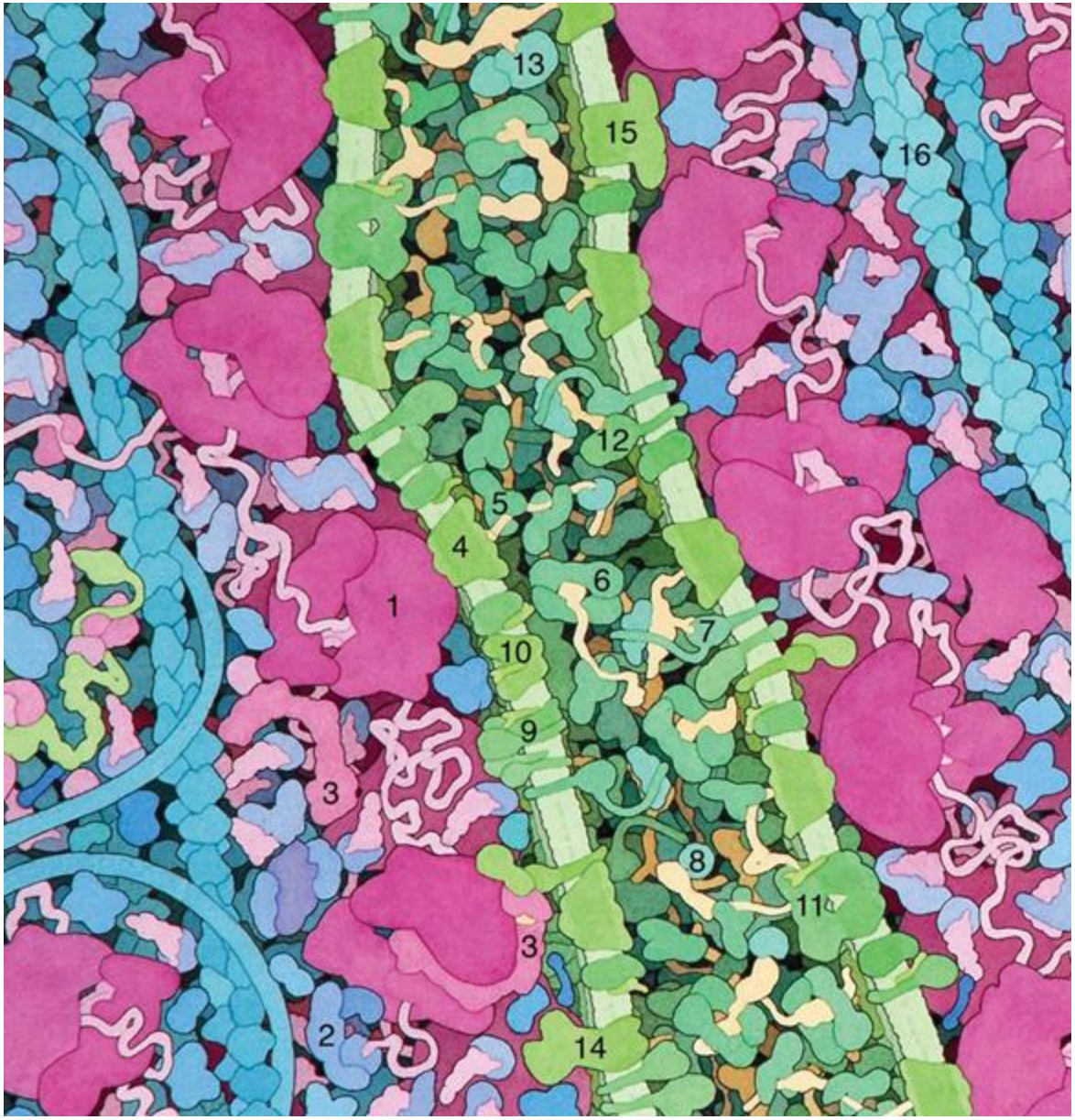
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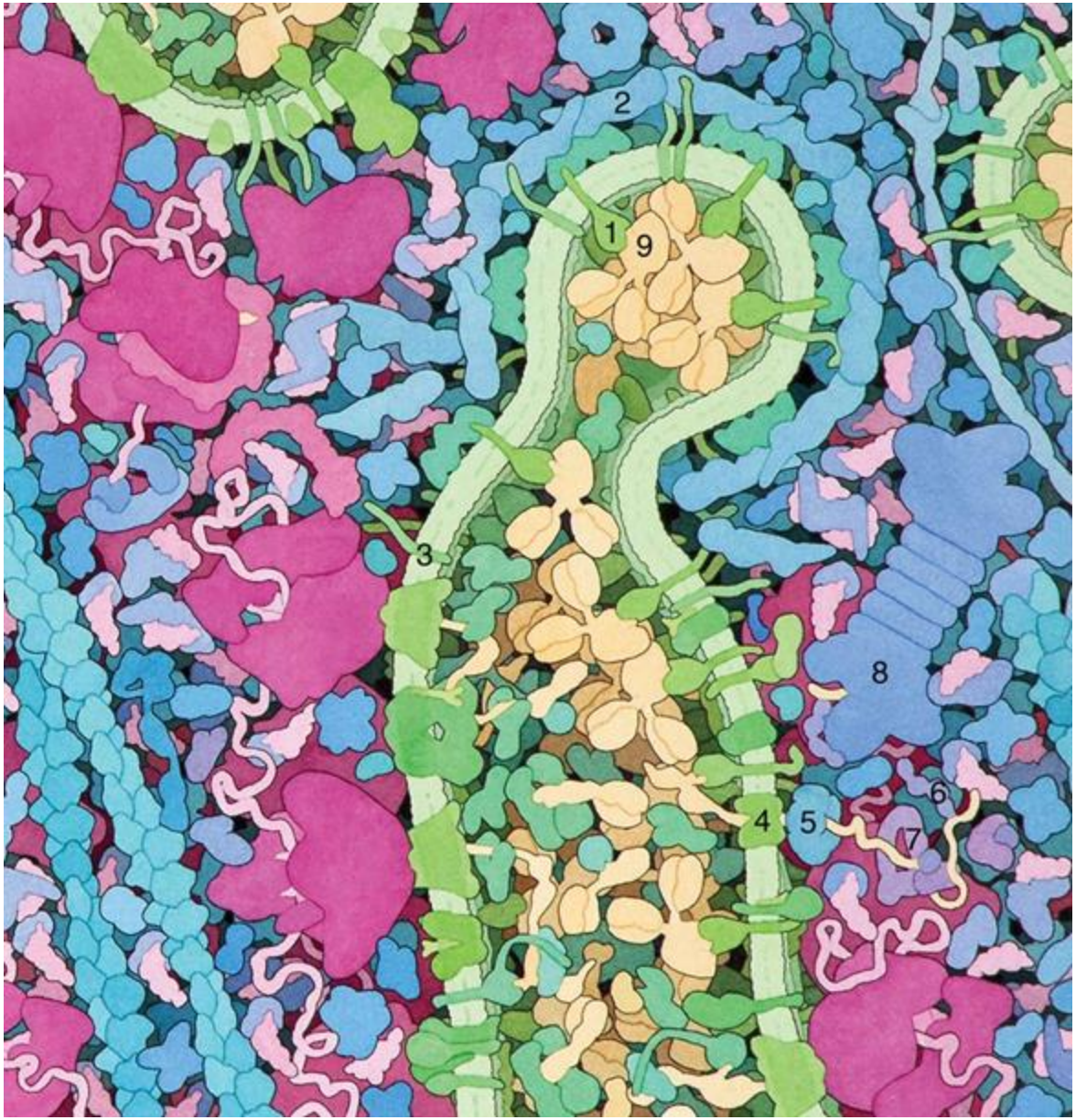
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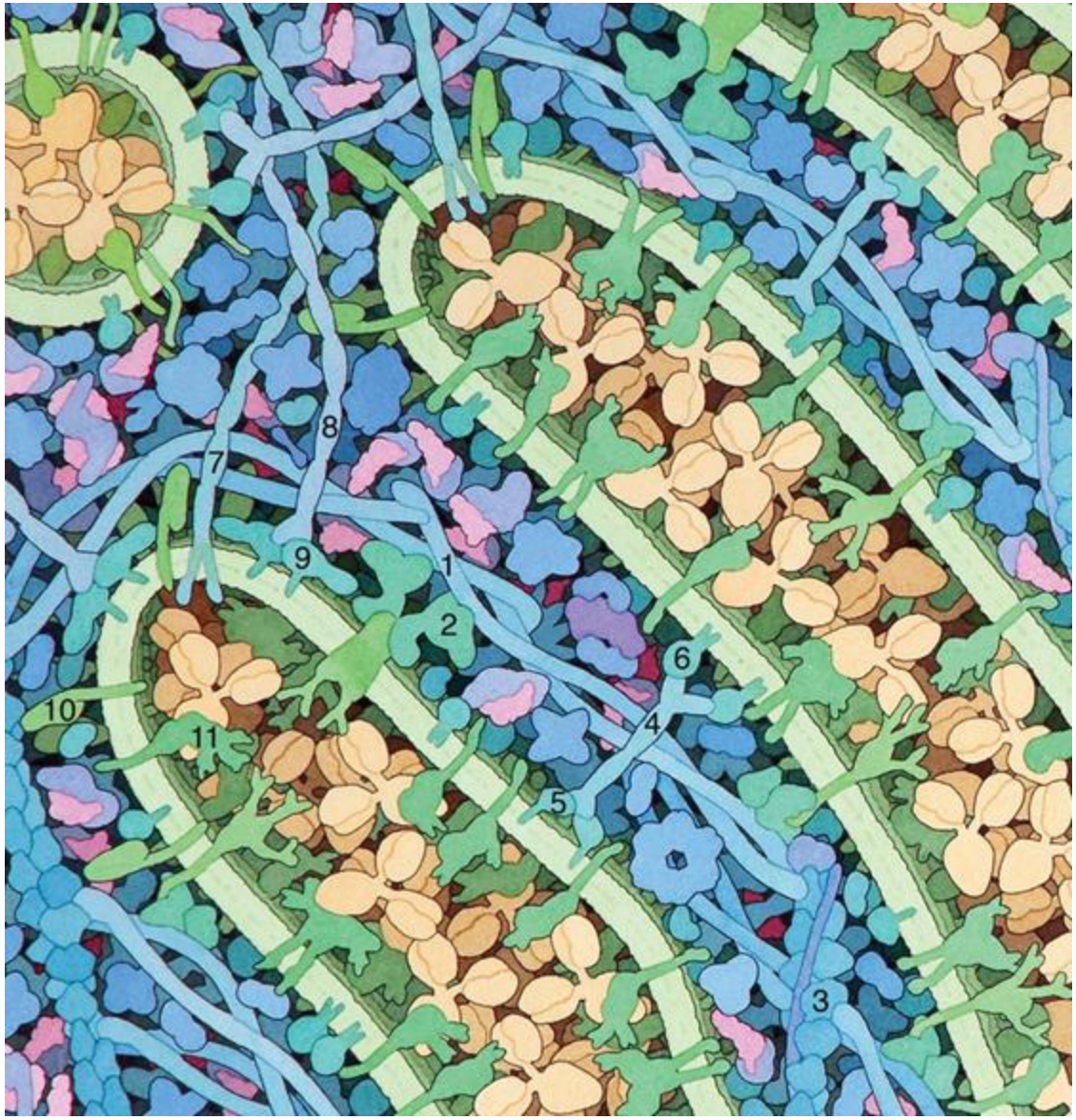
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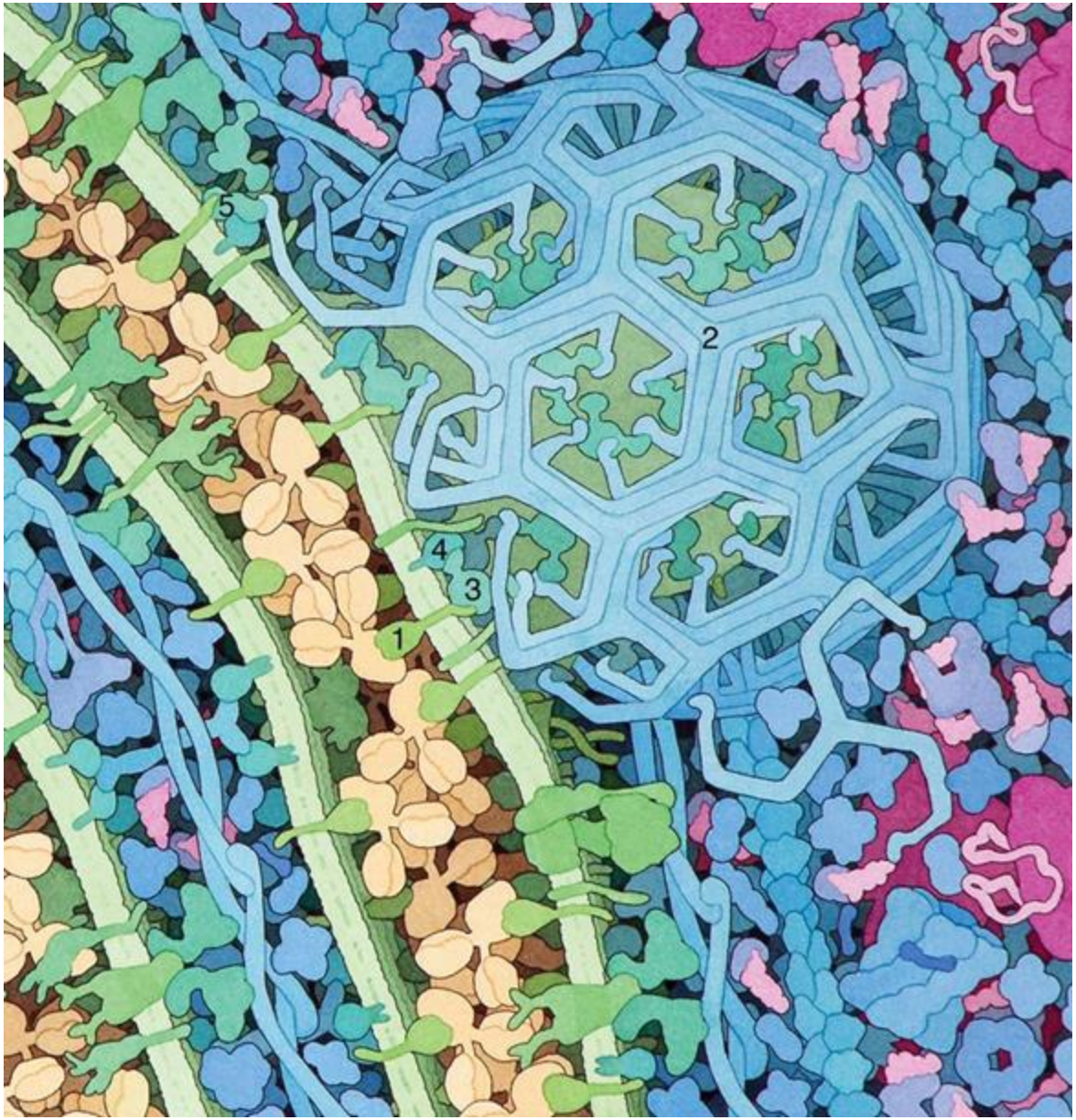
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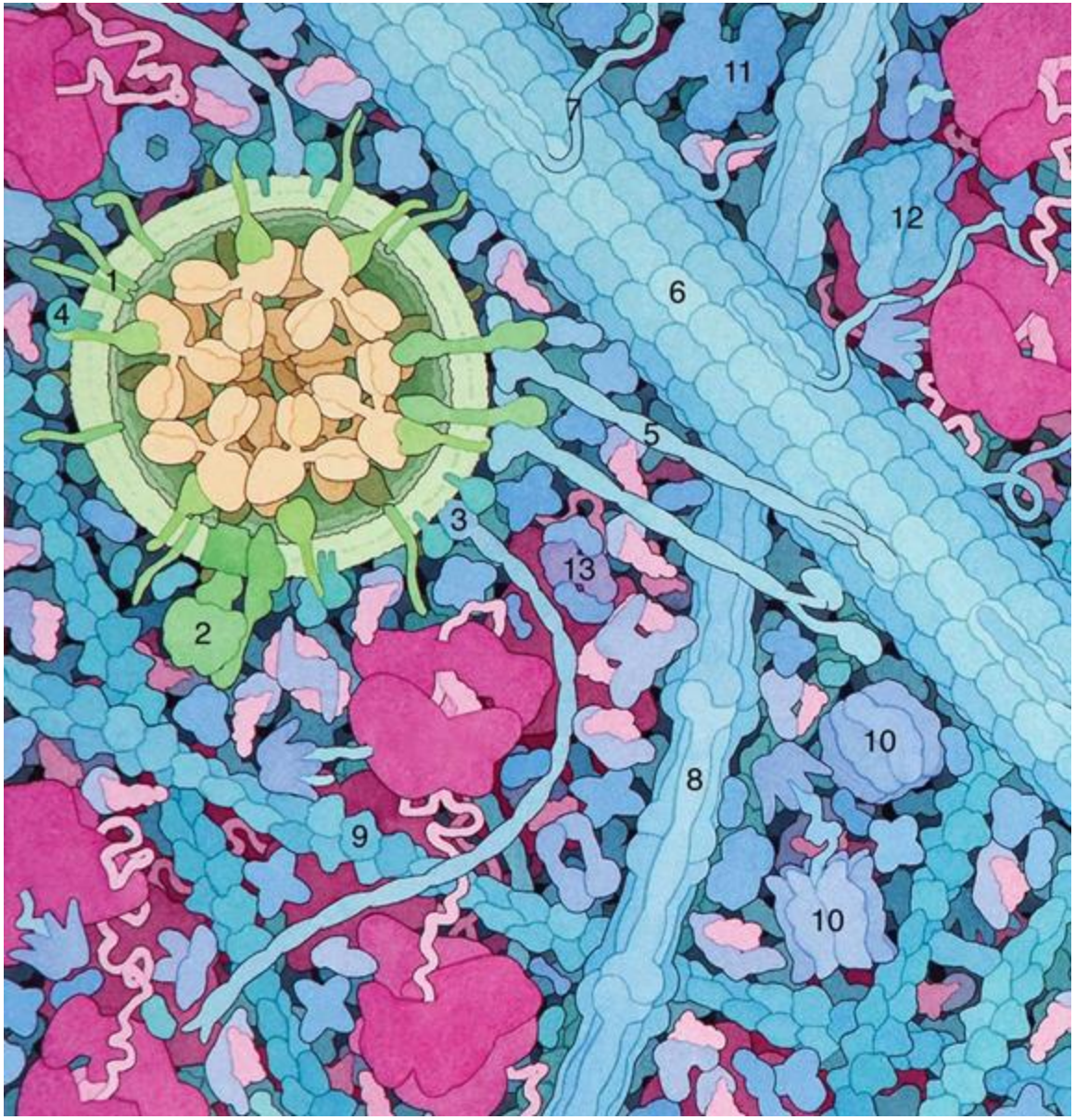
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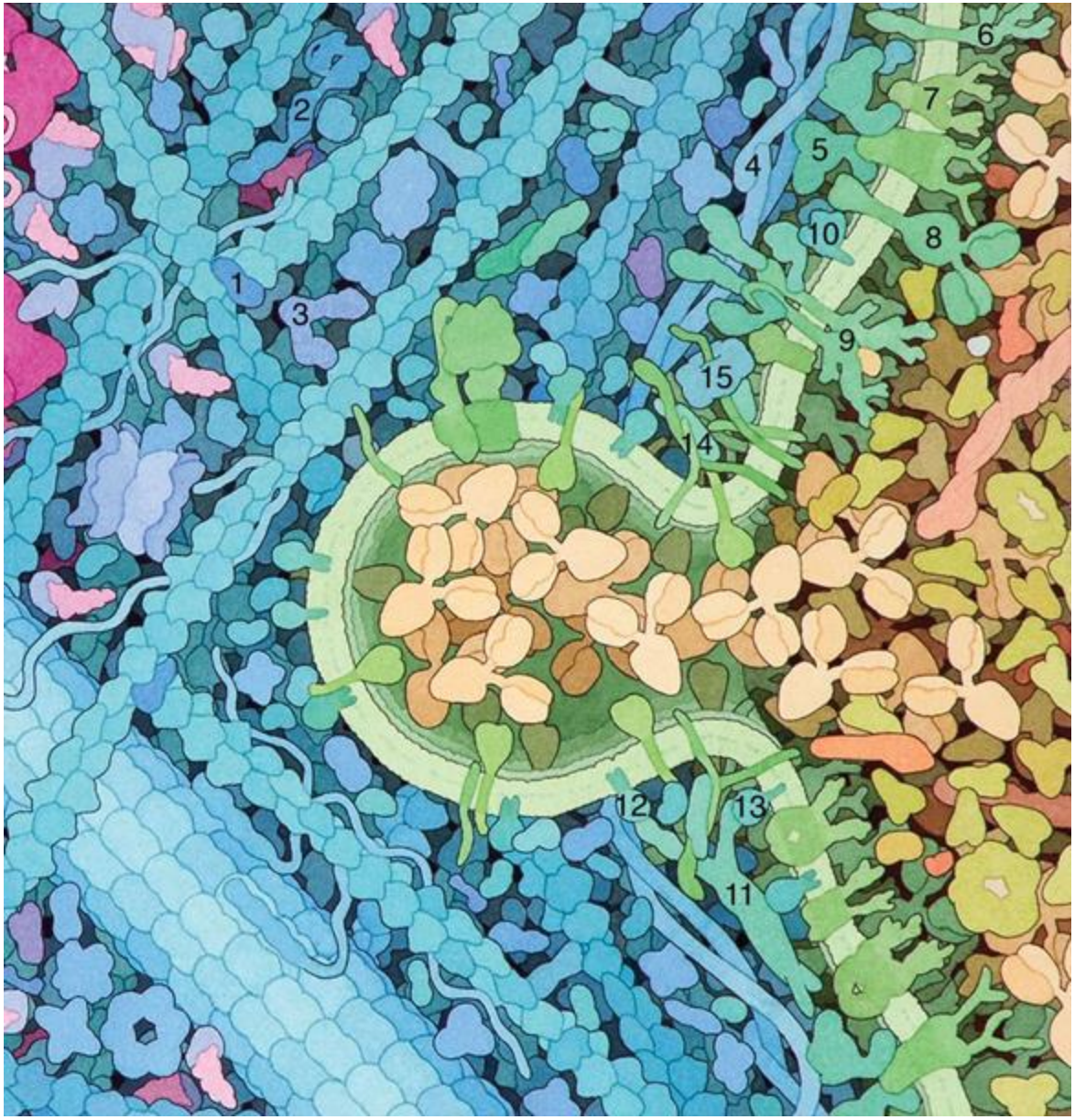
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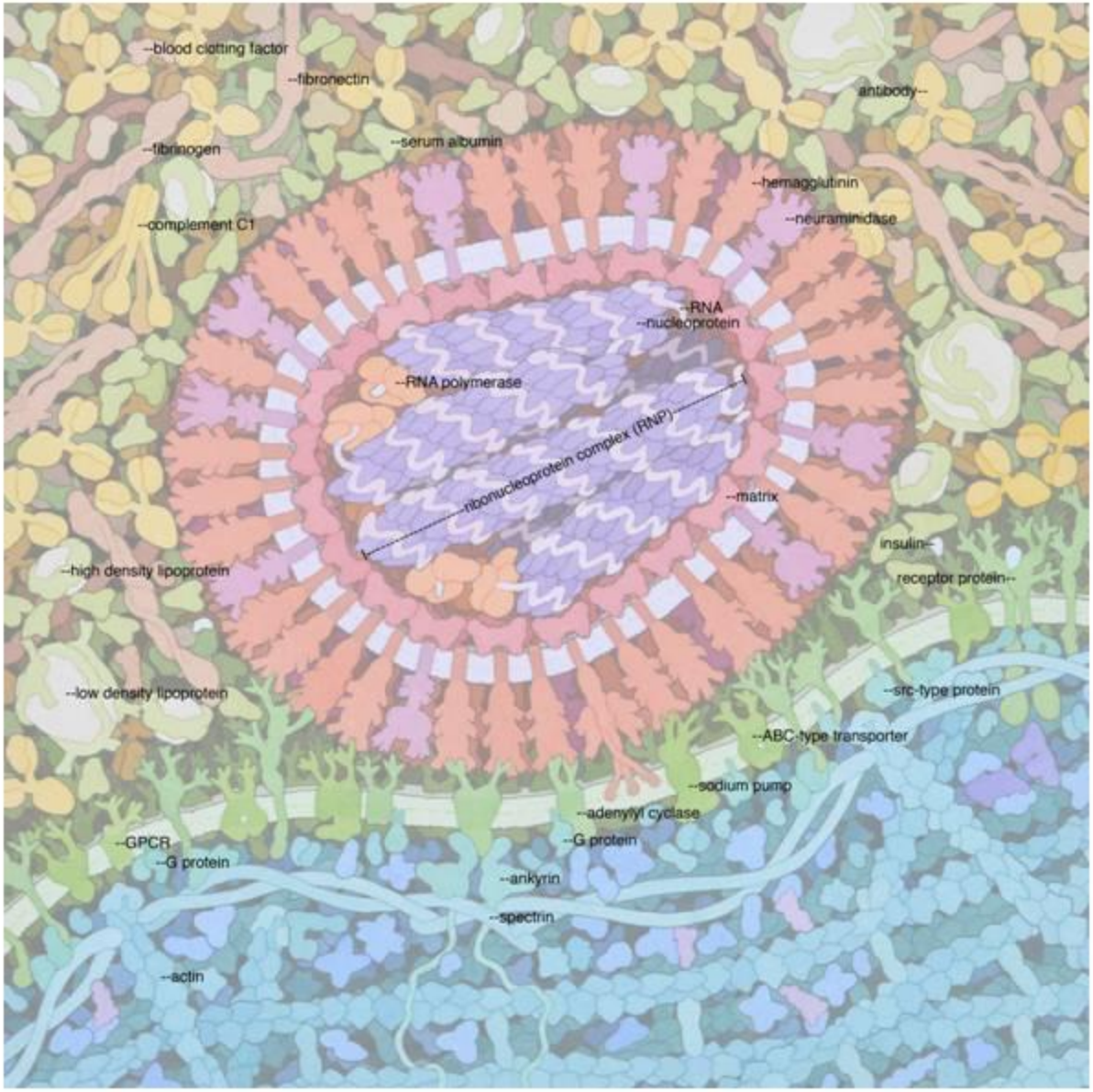
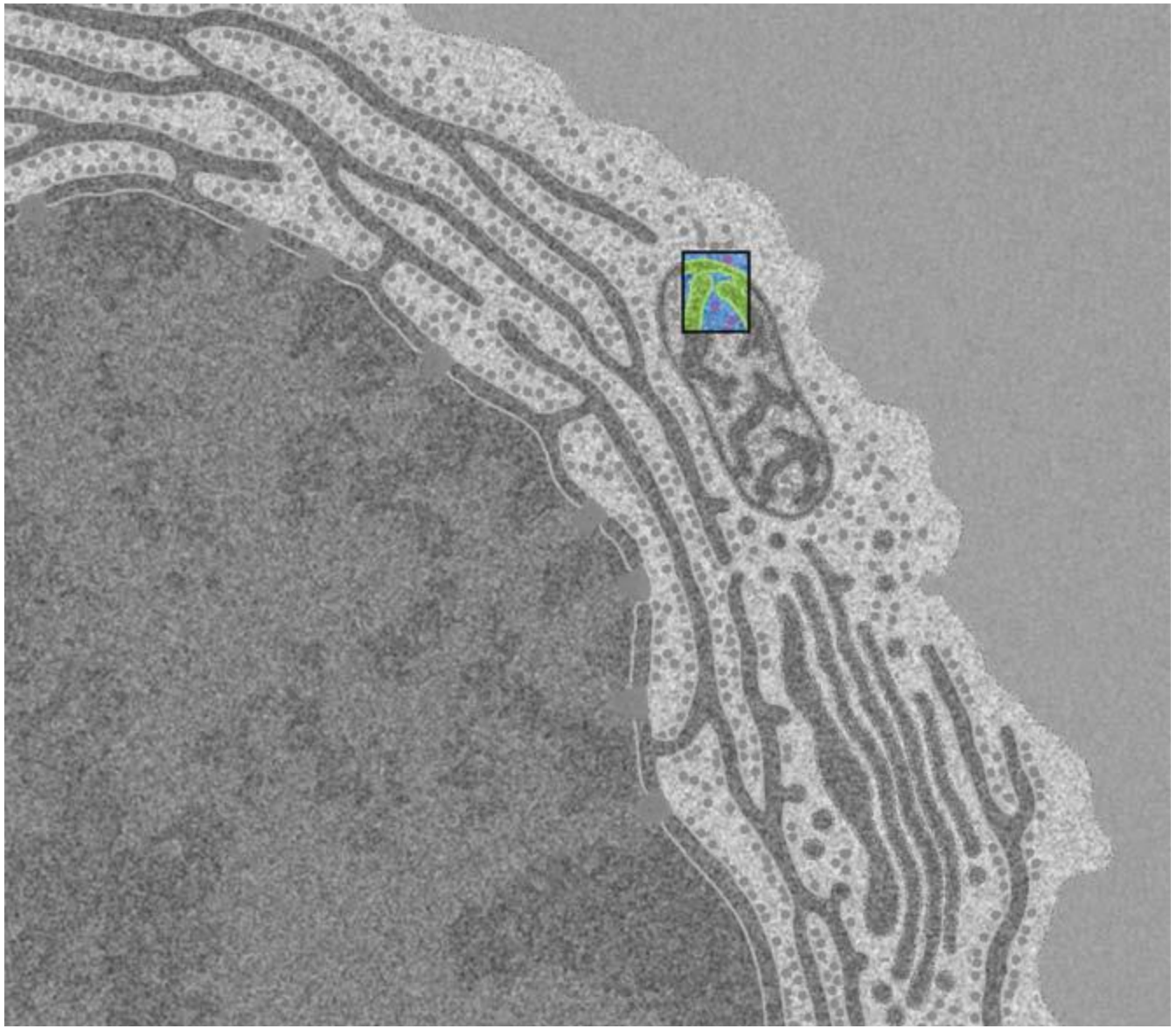
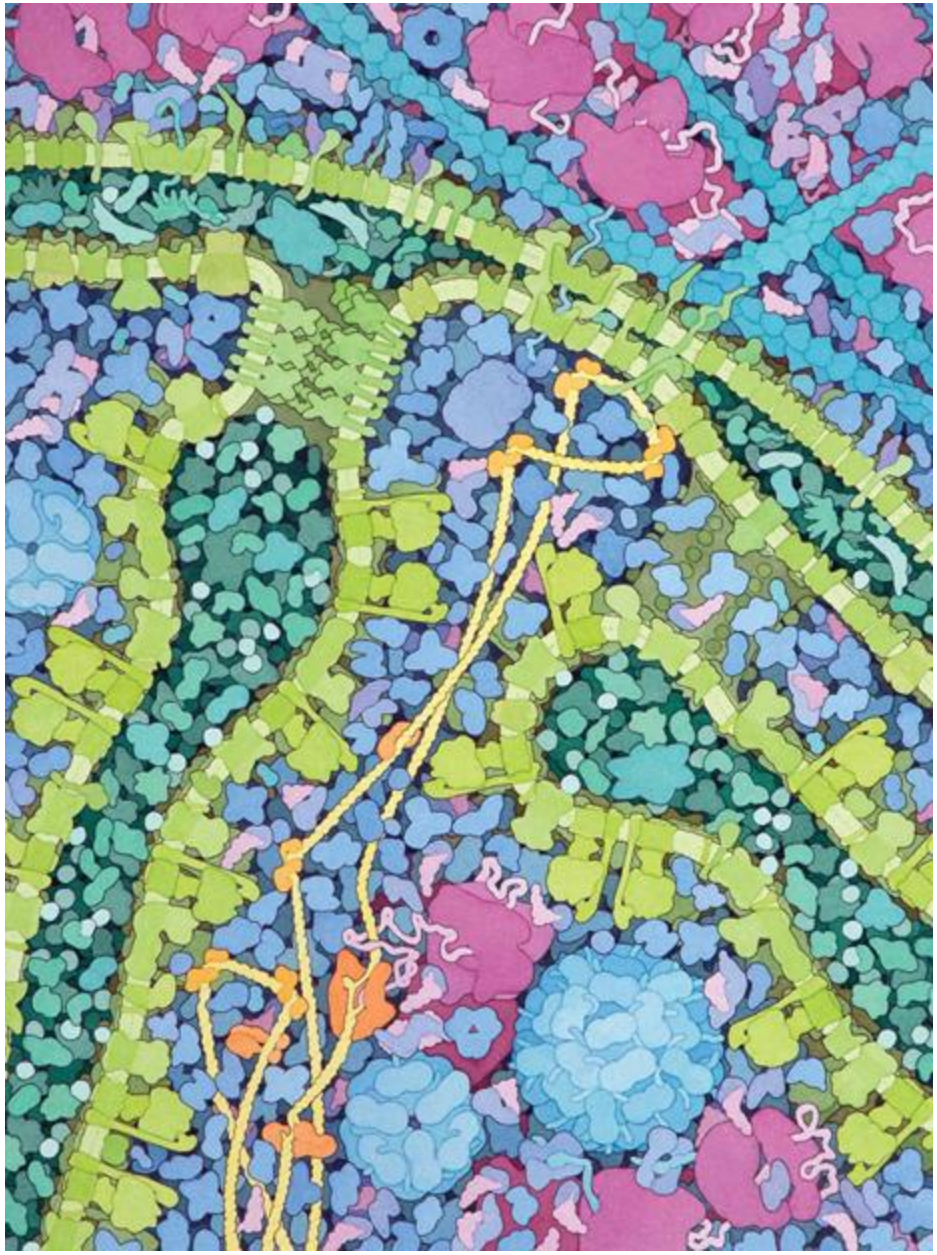
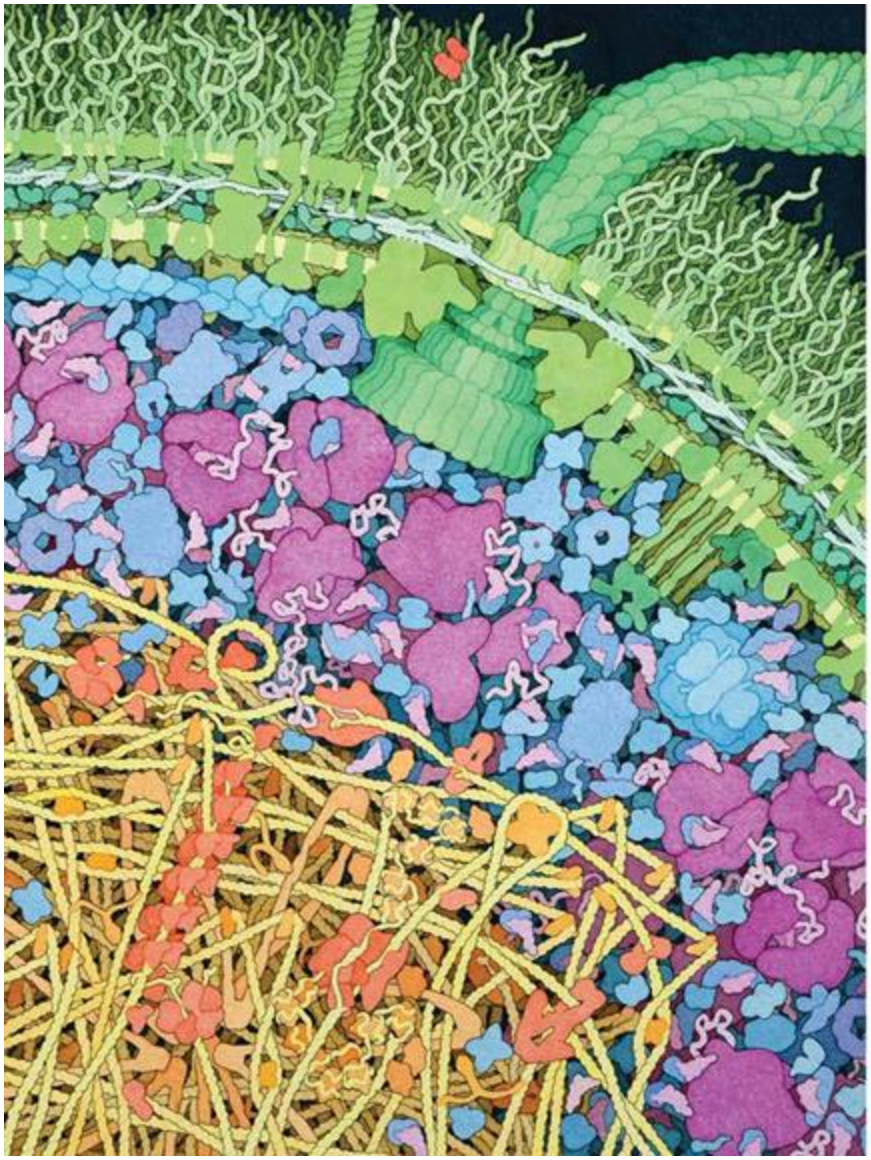

--blood clotting factor
--fibronectin
antibody--
--fibrinogen
--serum albumin
--hemagglutinin
--neuraminidase
--complement C1
--RNA
--nucleoprotein
--RNA polymerase
ribonucleoprotein complex (RNP)
--matrix
insulin--
receptor protein--
--high density lipoprotein
--low density lipoprotein
--src-type protein
--ABC-type transporter
--sodium pump
--adenylyl cyclase
--G protein
--GPCR
--G protein
--ankyrin
--spectrin
--actin

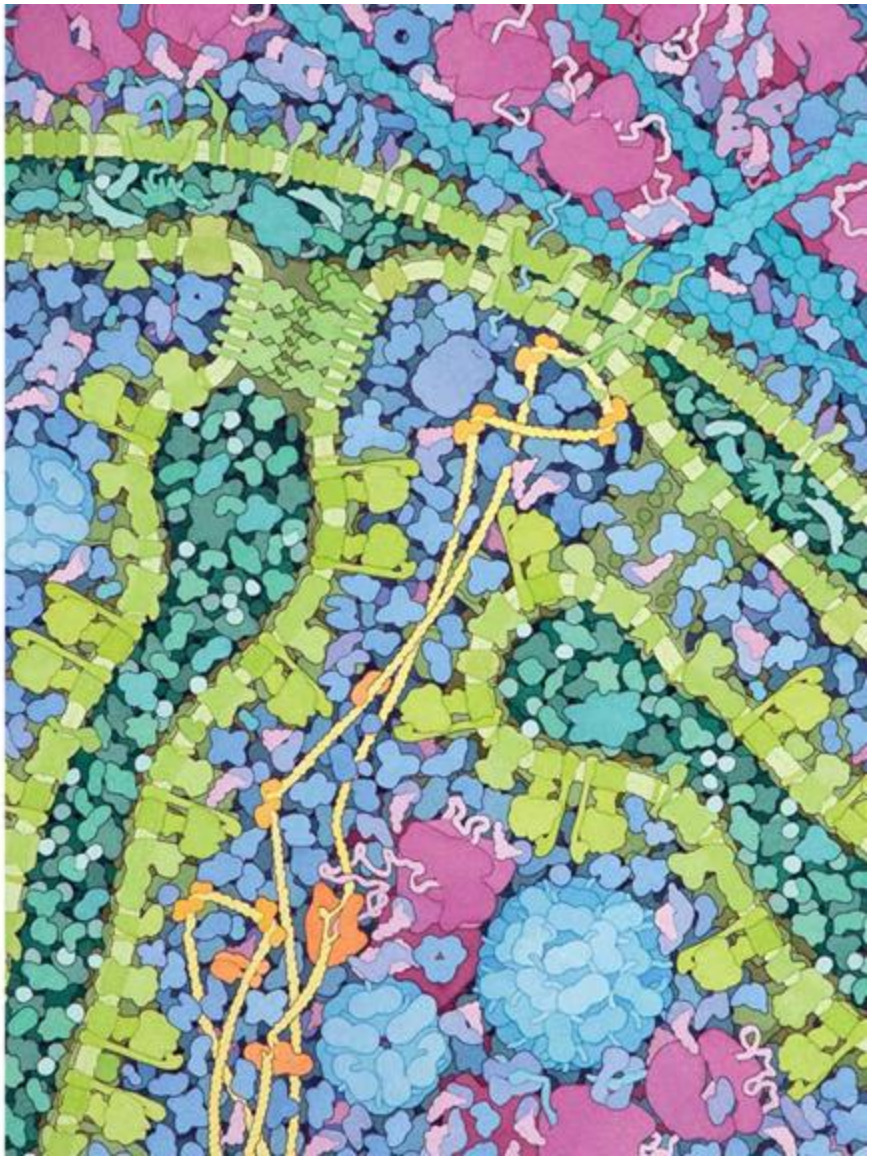


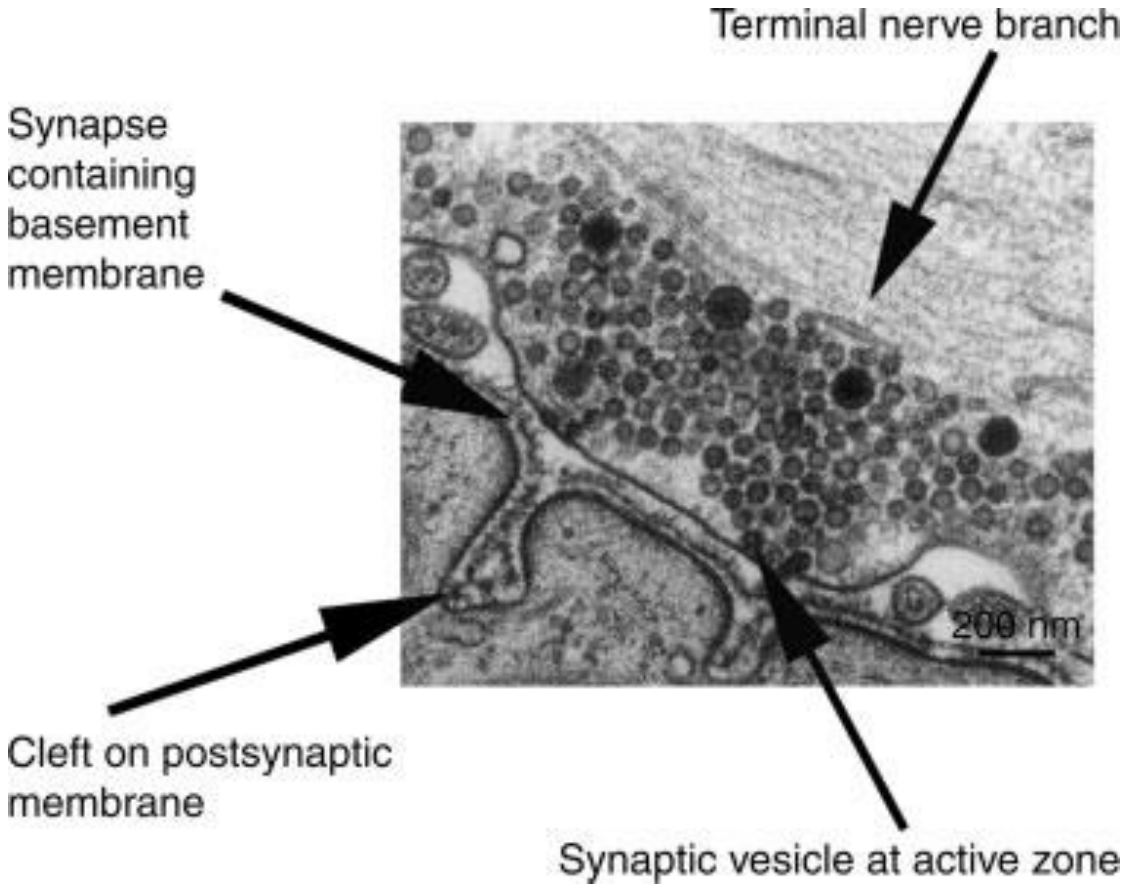


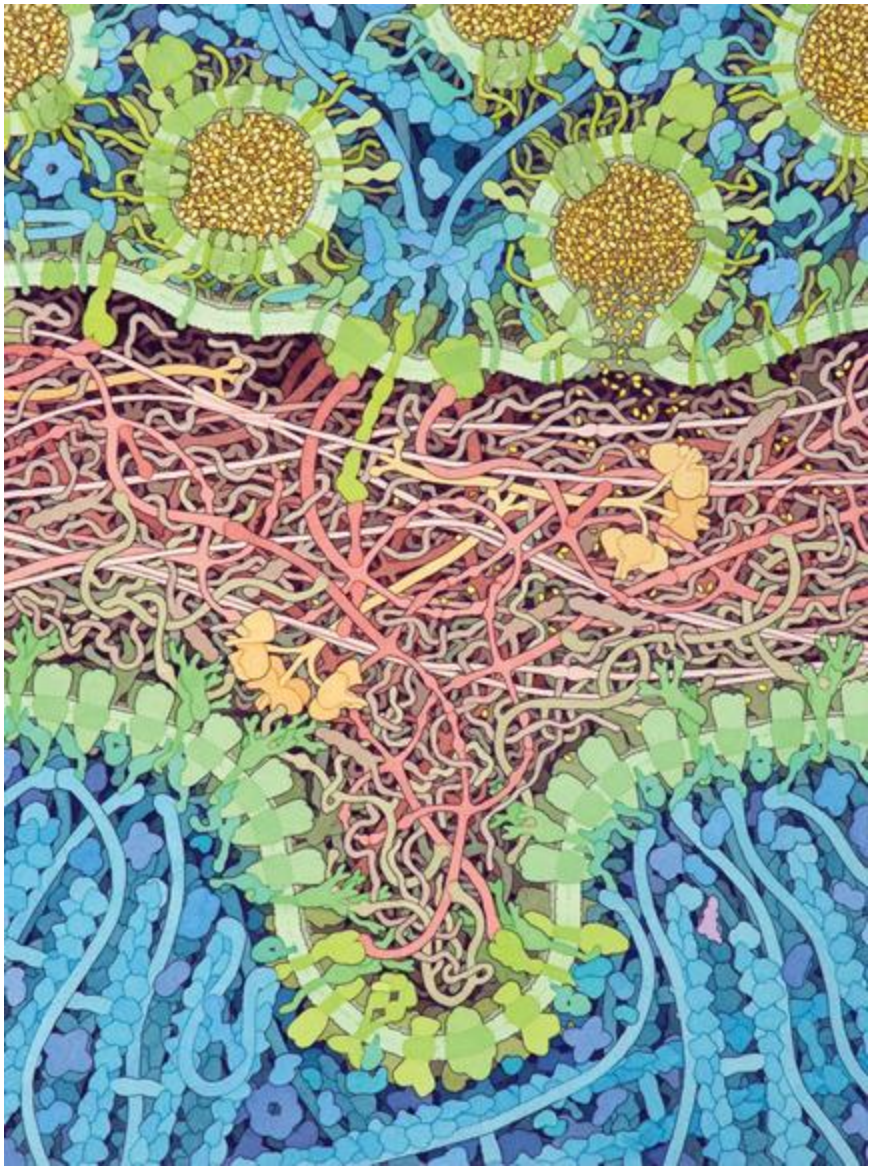
E. coli

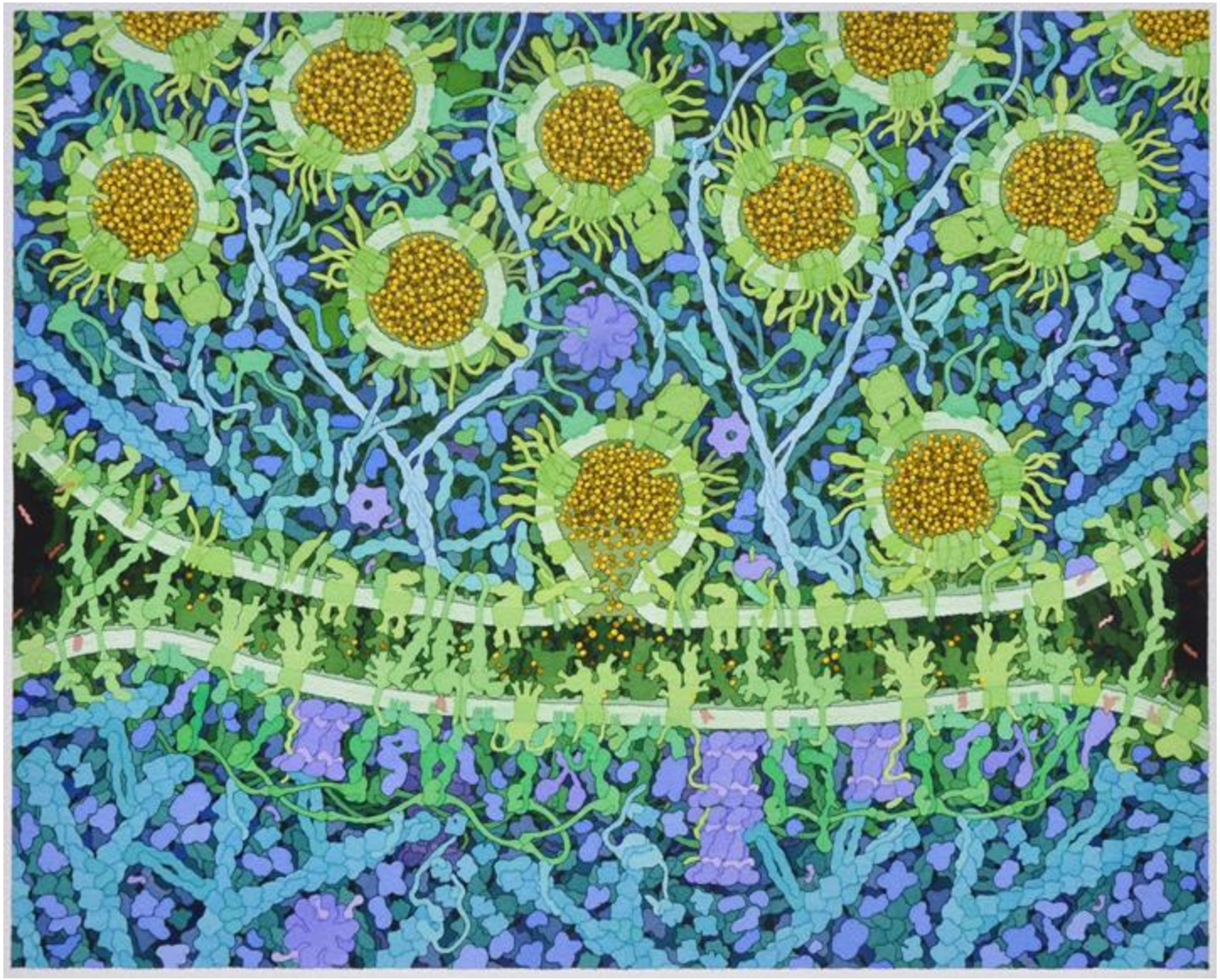


Mitochondrion




Terminal nerve branch
Synapse containing basement membrane
200 nm
Cleft on postsynaptic membrane
Synaptic vesicle at active zone





Glutamate Signaling Synapse