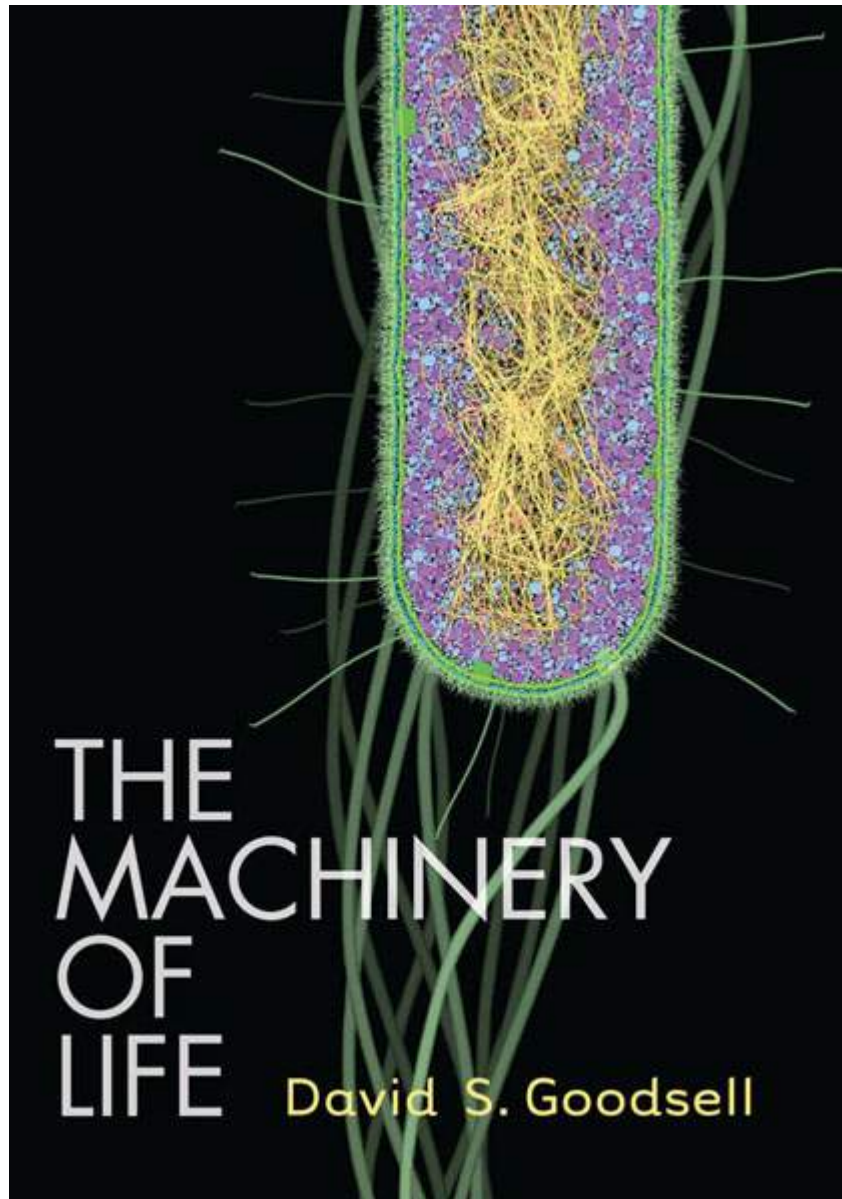




David Goodsell

Scripps Research Institute

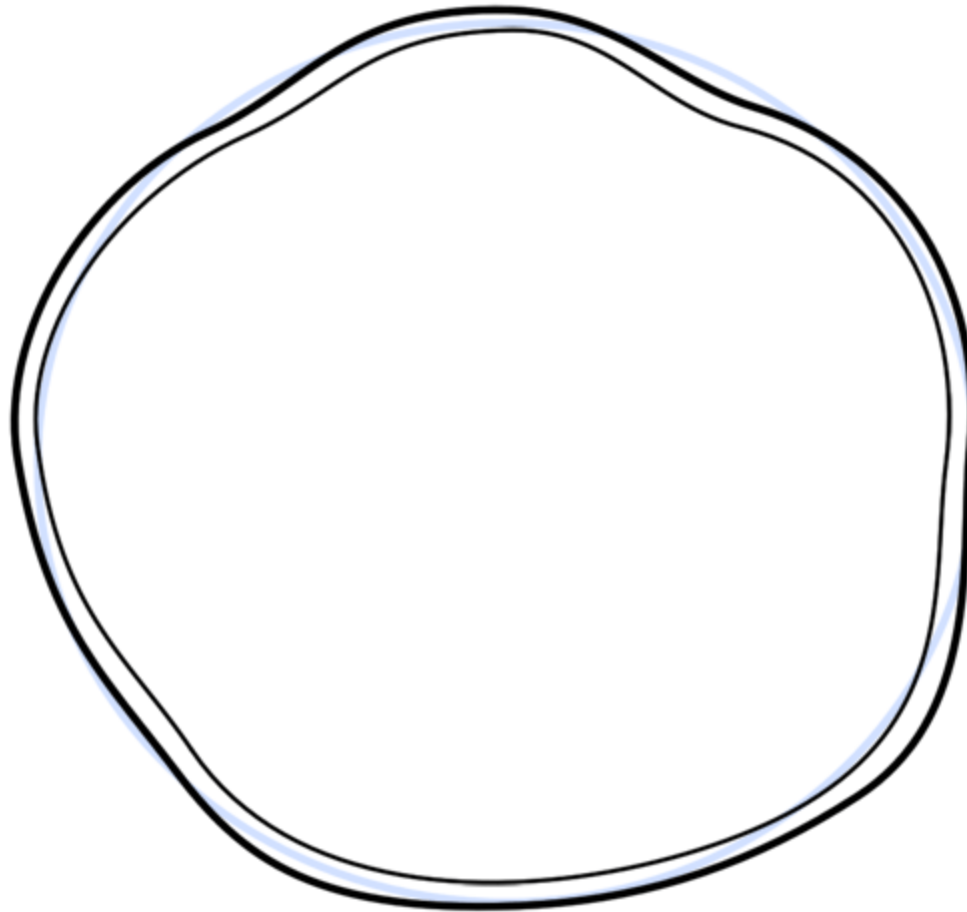
*Scientist, Author and Artist of
all things small.*

Molecule of the Month

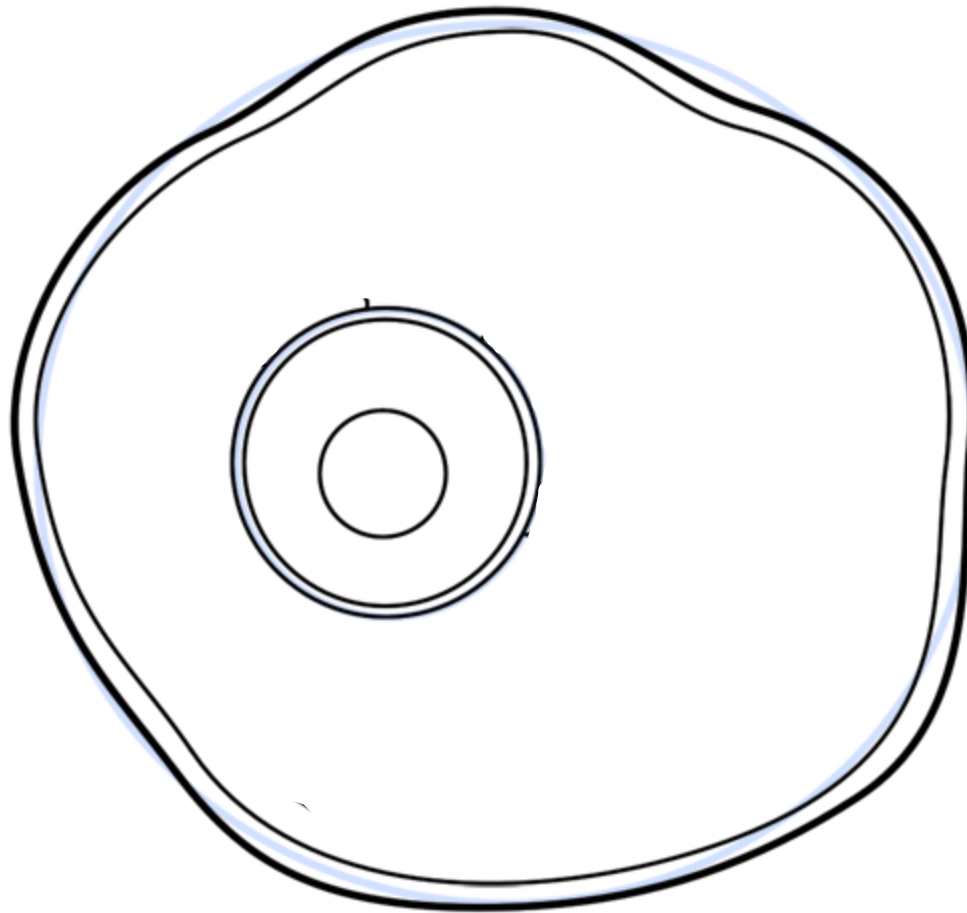
www.pdb.org



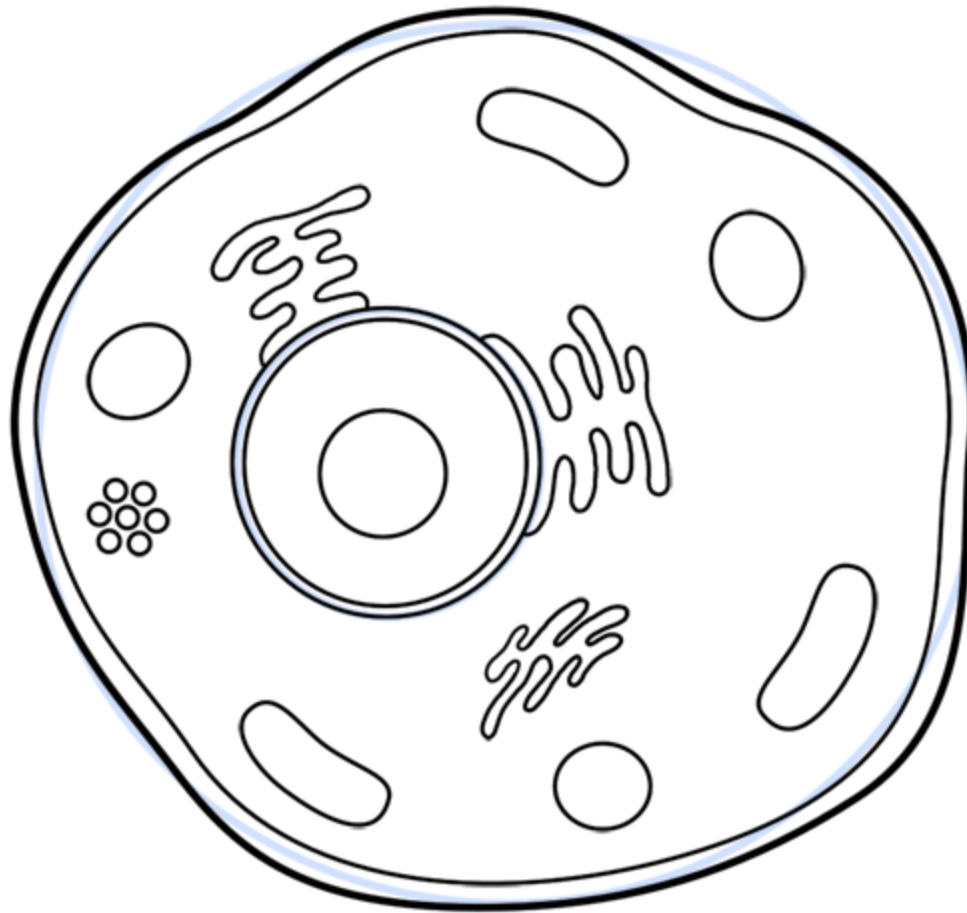
When we draw a cell....



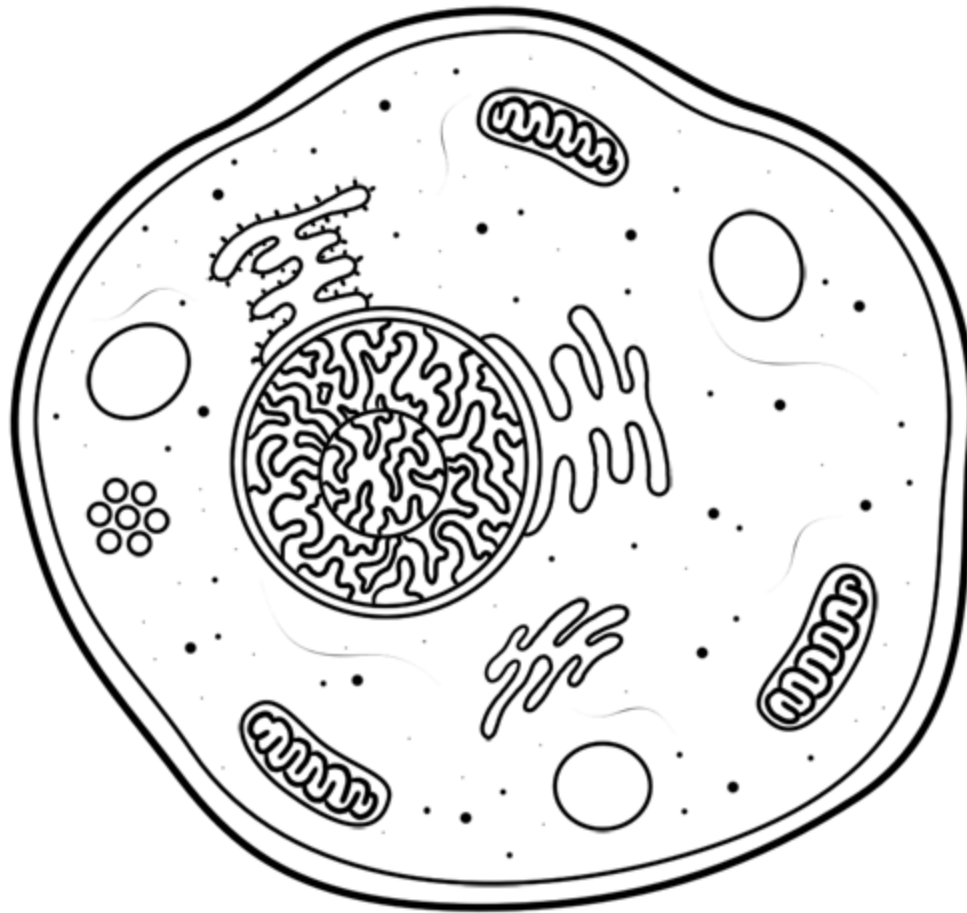
We start with a **plasma membrane**.....



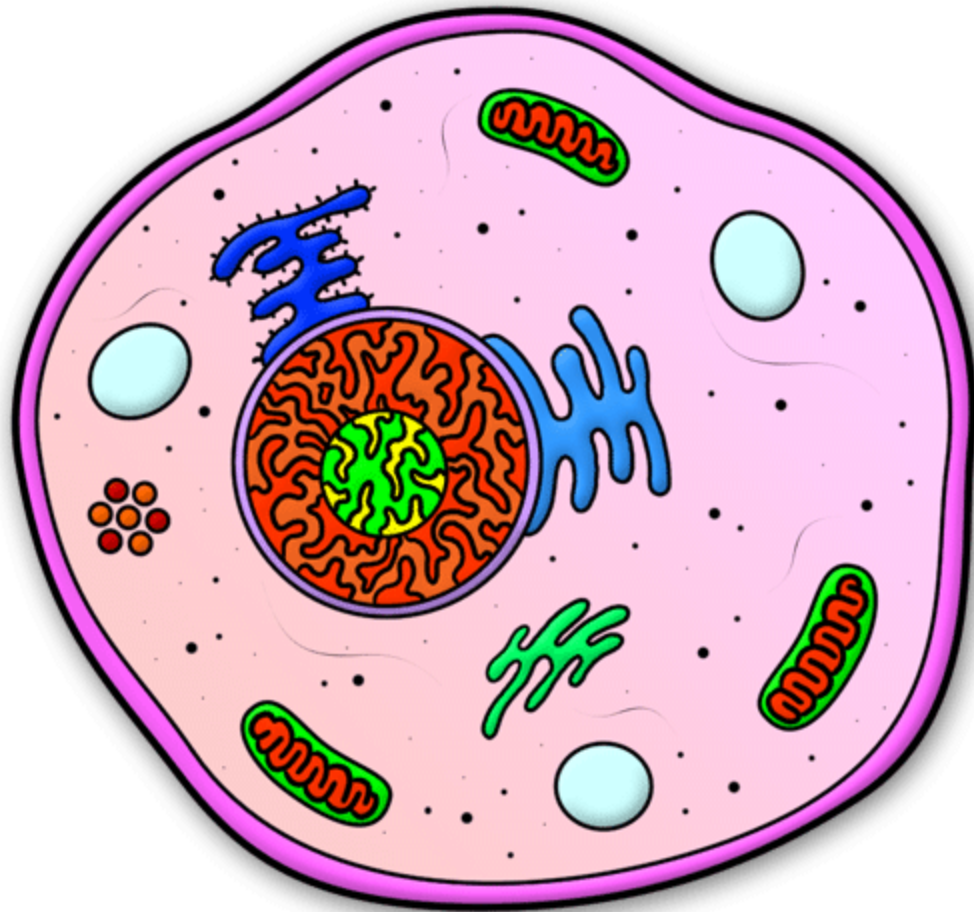
Add a **nucleus**....



Throw in lots of little details....



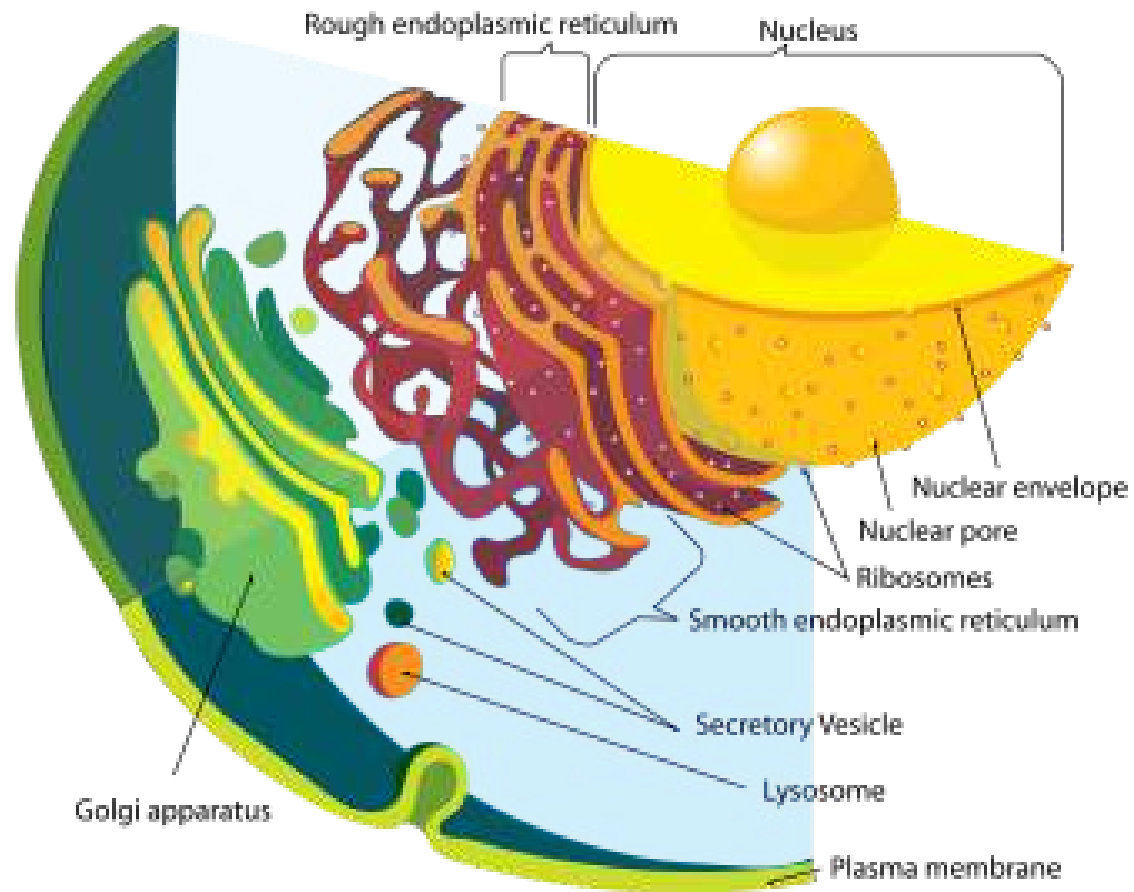
And some dots to represent the **cytoplasm**



And you're done!

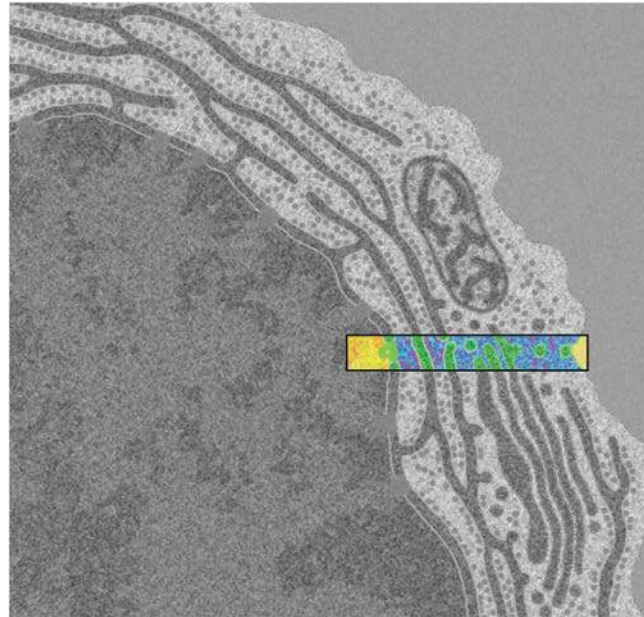


- | | |
|--------------------------------|-----------------|
| 1. Nucleolus | 7. Cytoskeleton |
| 2. Nucleus | 8. Smooth E.R. |
| 3. Ribosome | 9. Mitochondria |
| 4. Vesicle | 10. Vacuole |
| 5. Rough Endoplasmic reticulum | 11. Cytosol |
| 6. Golgi Apparatus | 12. Lysosome |

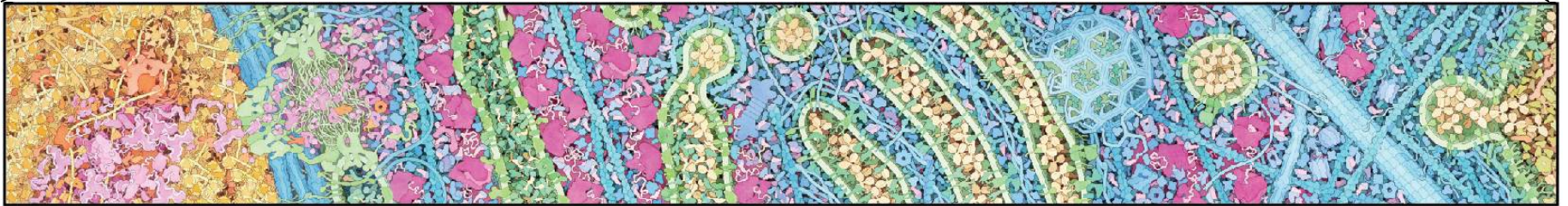
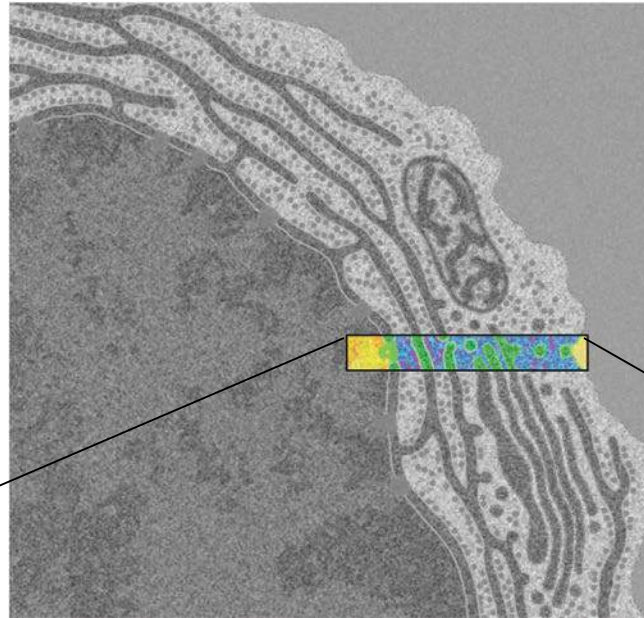


http://en.wikipedia.org/wiki/Animal_cell

An electron micrograph of an antibody-producing B-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

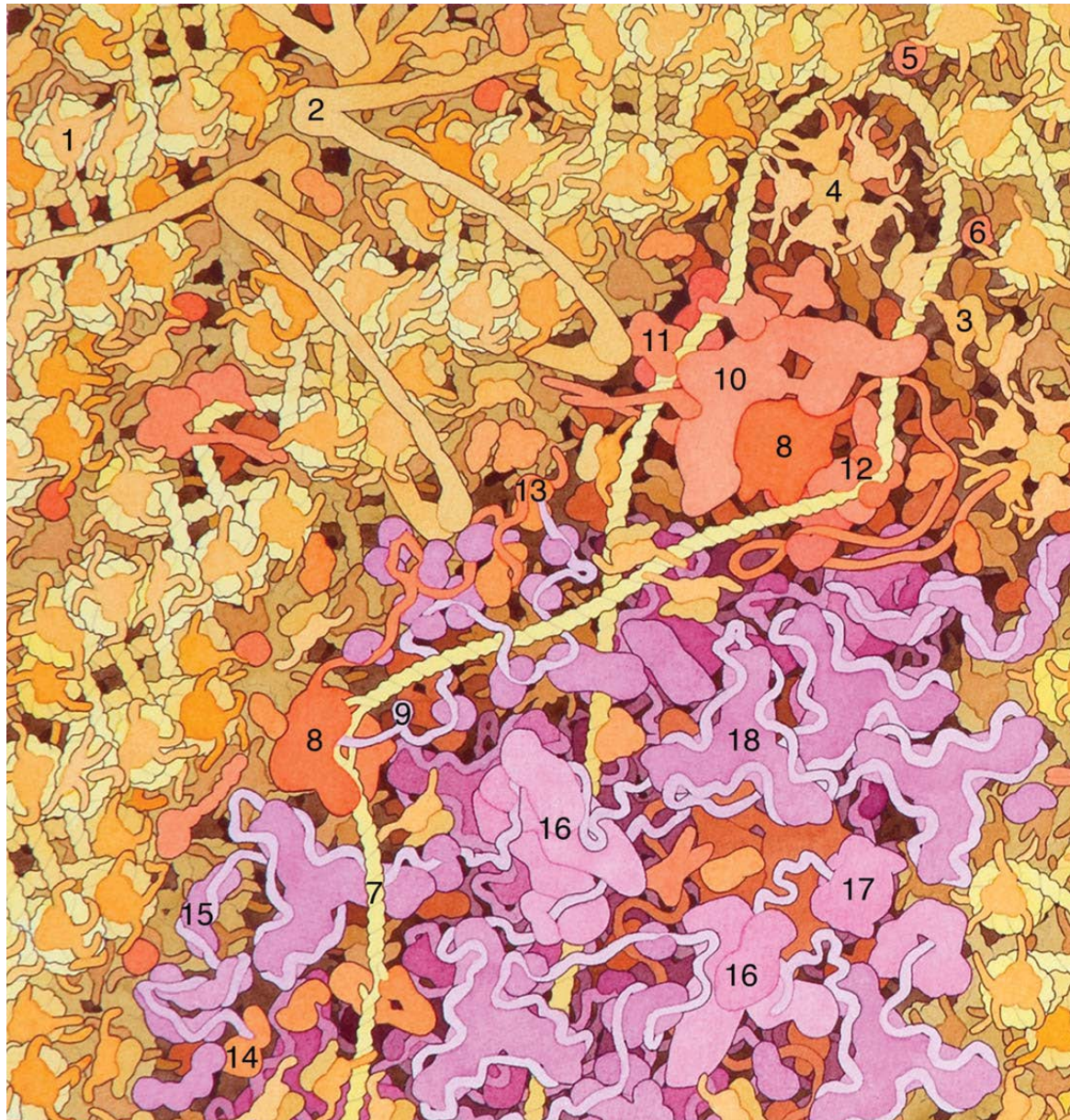
Received for publication, October 7, 2010, and in revised form, December 13, 2010

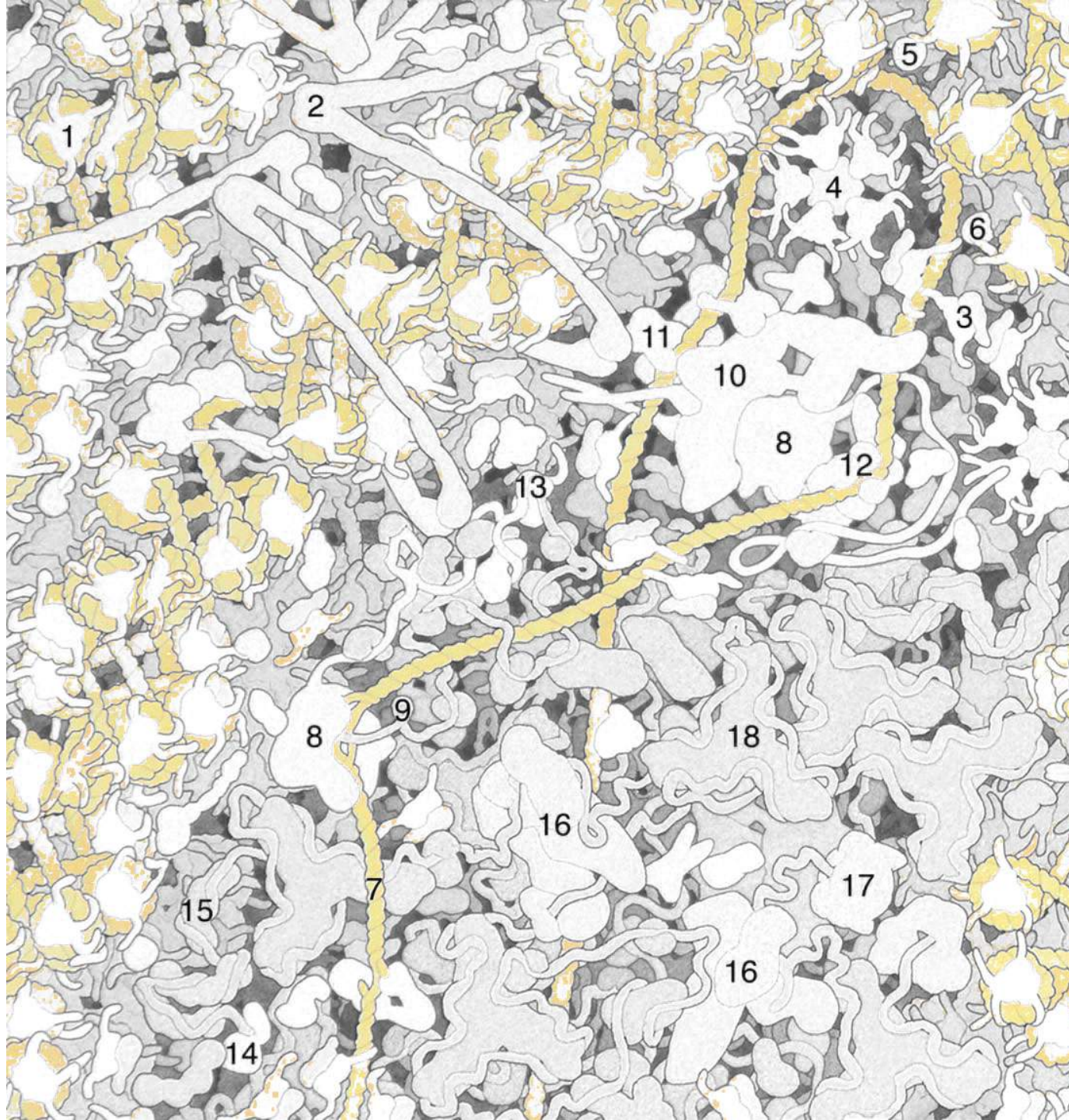
David S. Goodsell†

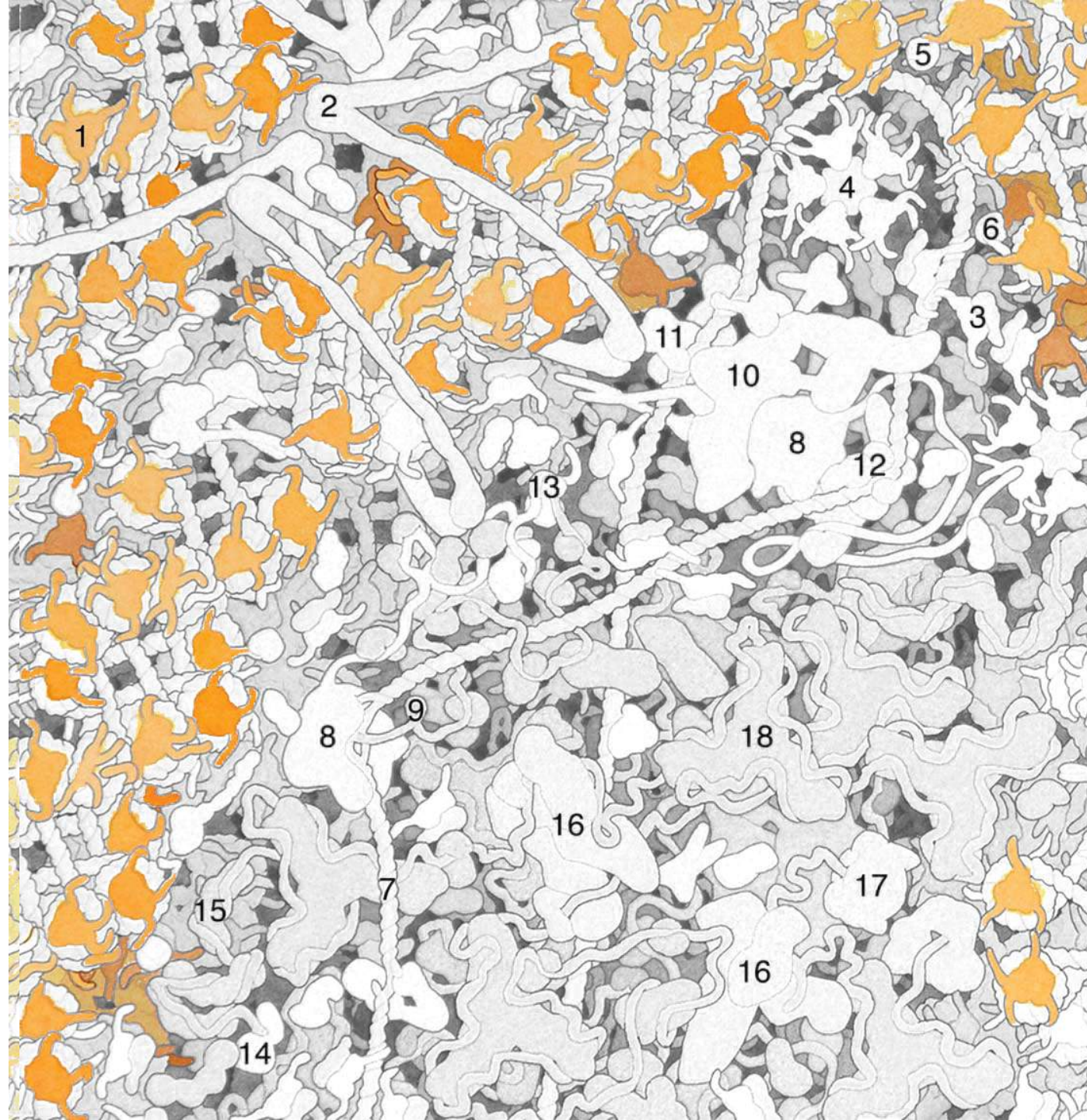
From the Department of Molecular Biology, The Scripps Research Institute, La Jolla, CA 92102

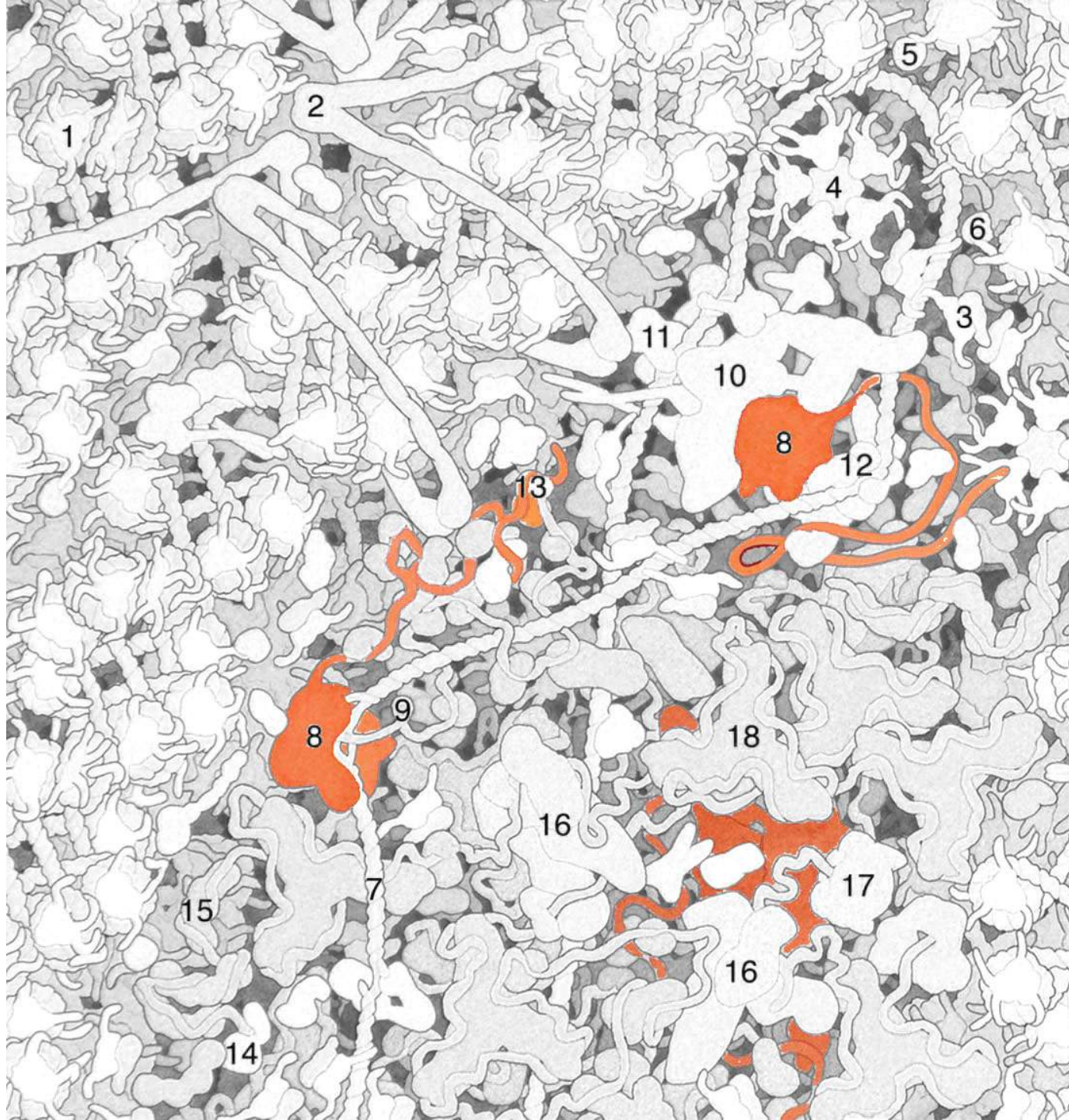
Diverse biological data may be used to create illustrations of molecules in their cellular context. This report describes the scientific results that support an illustration of a eukaryotic cell, enlarged by one million times to show the distribution and arrangement of macromolecules. The panoramic cross 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.

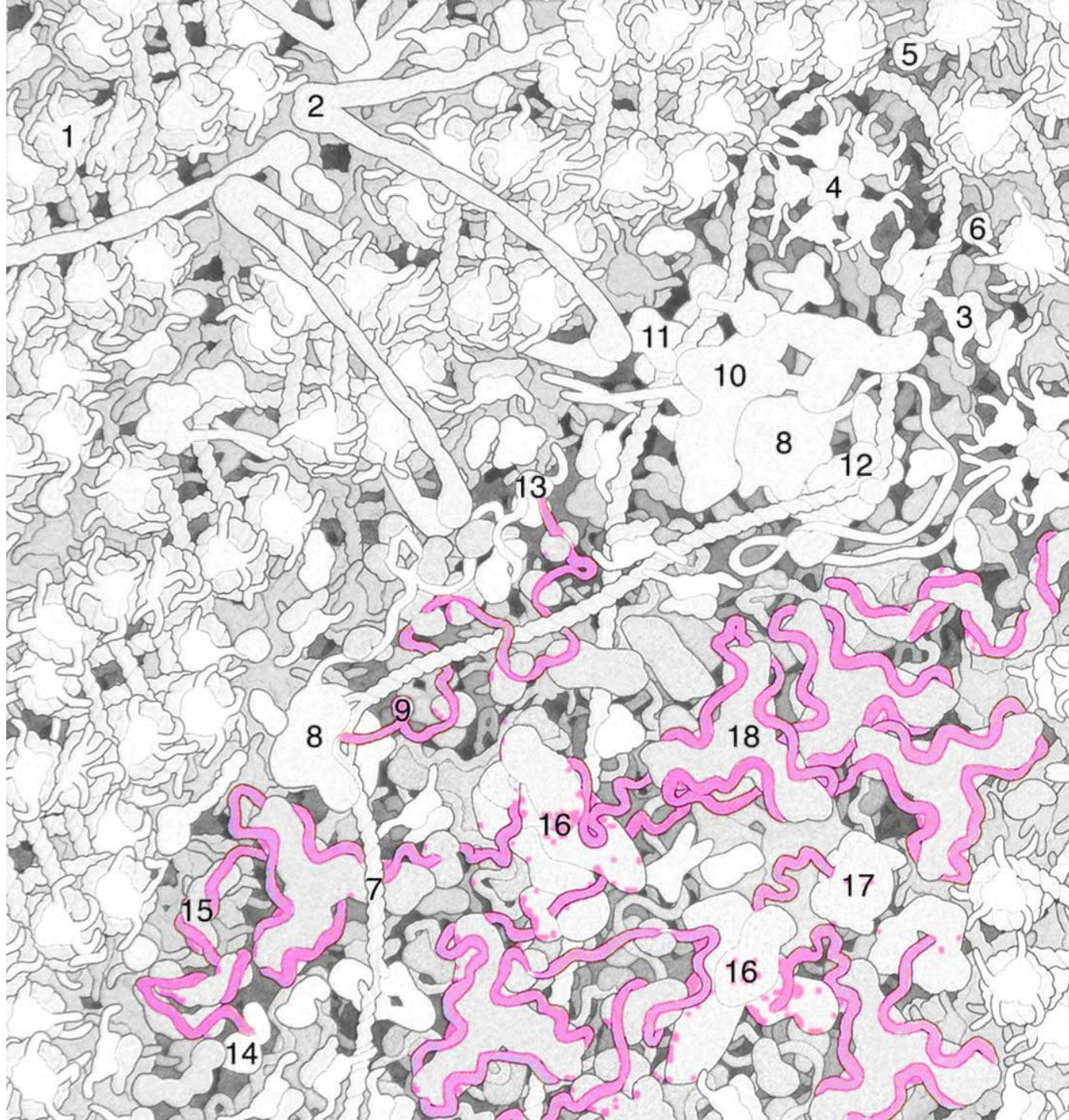
Nucleus

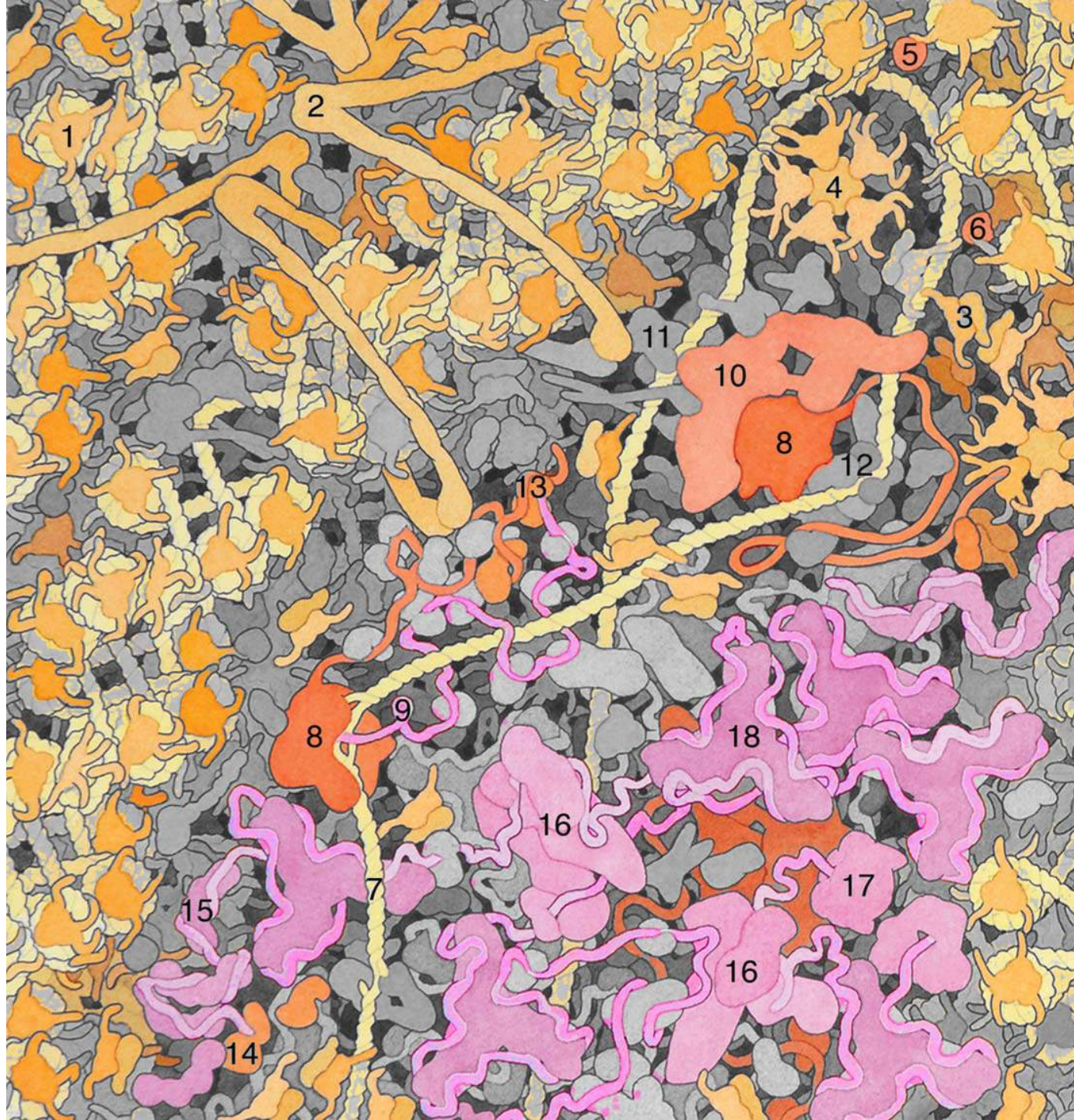




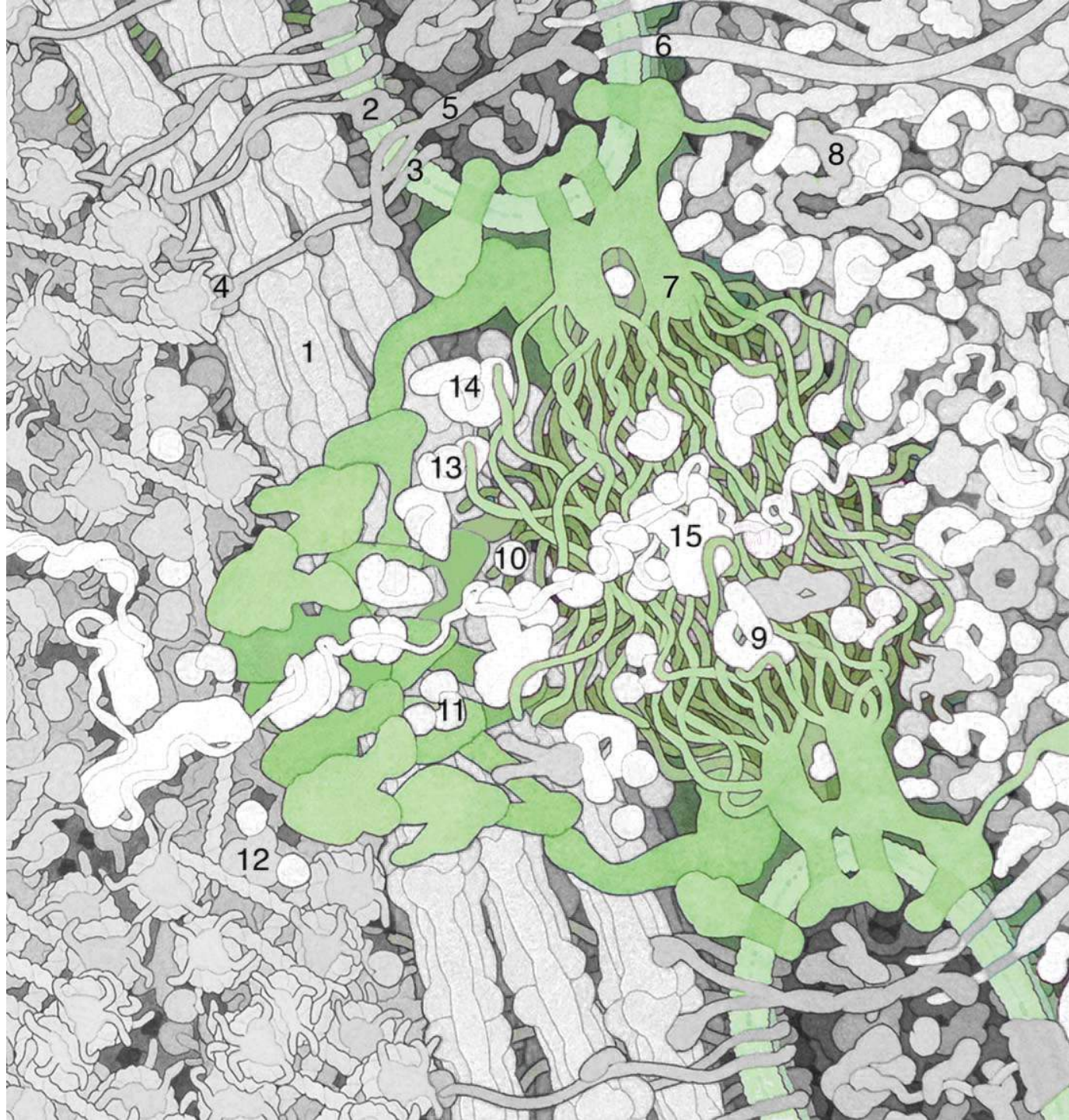


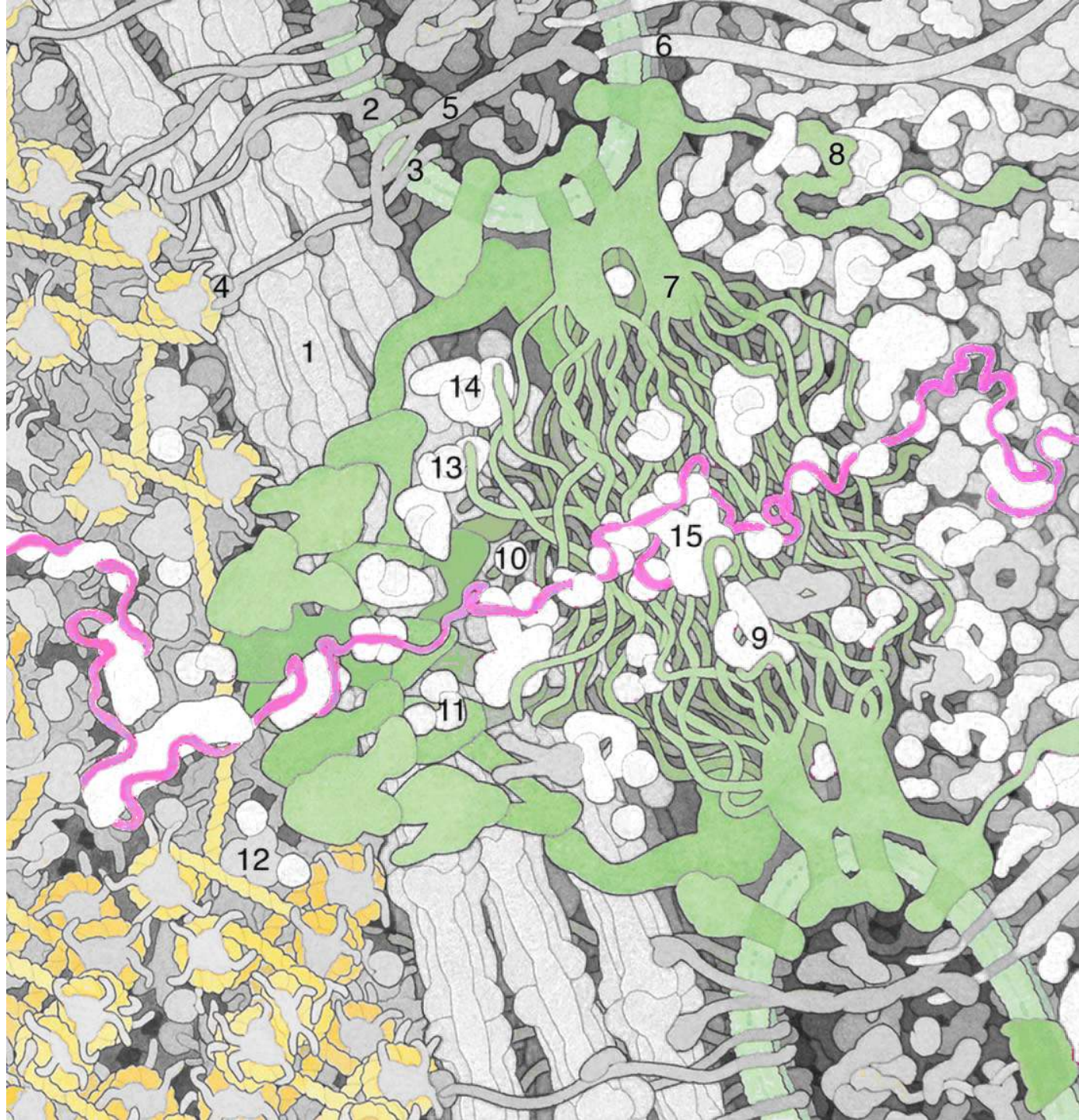




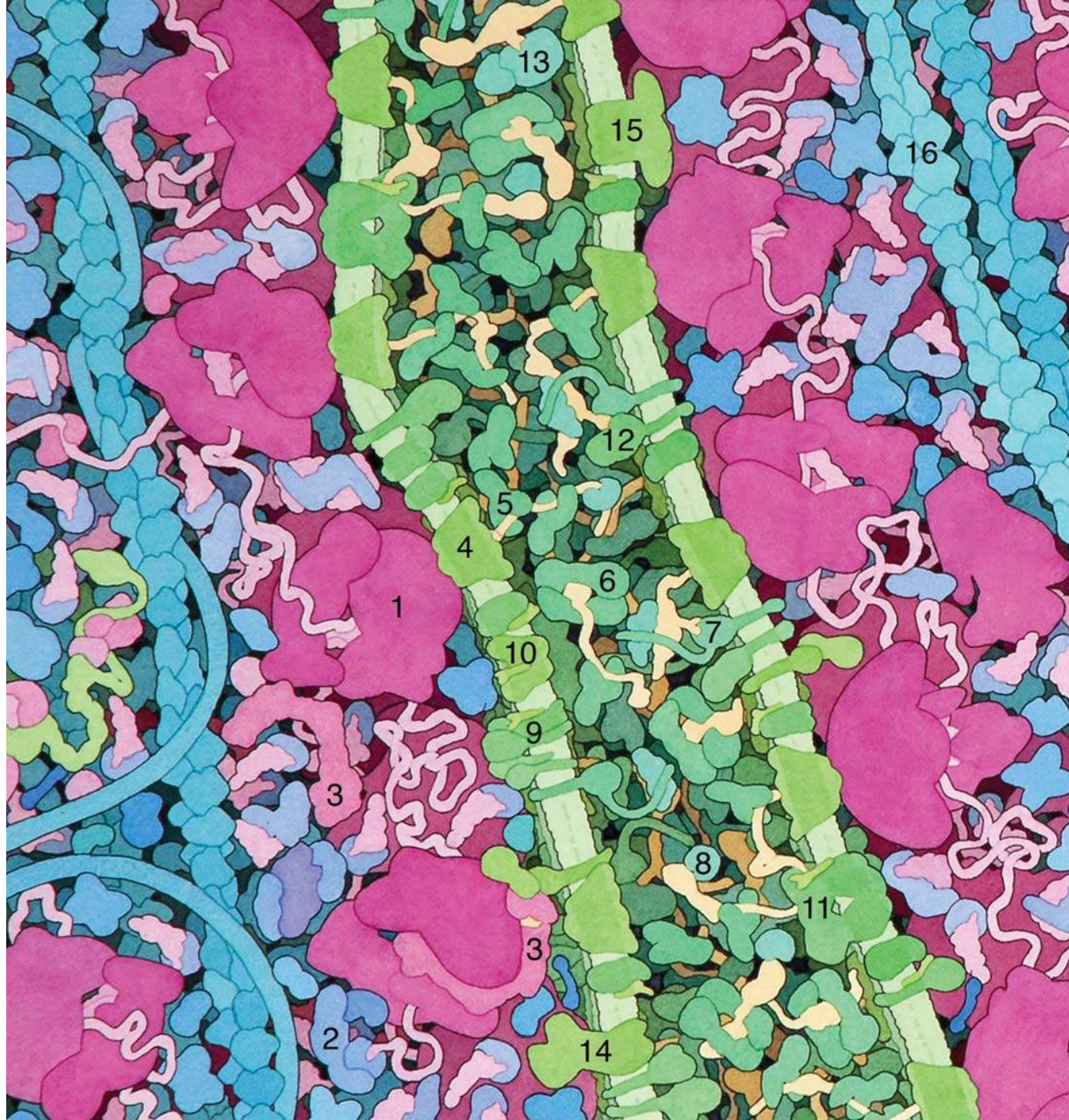


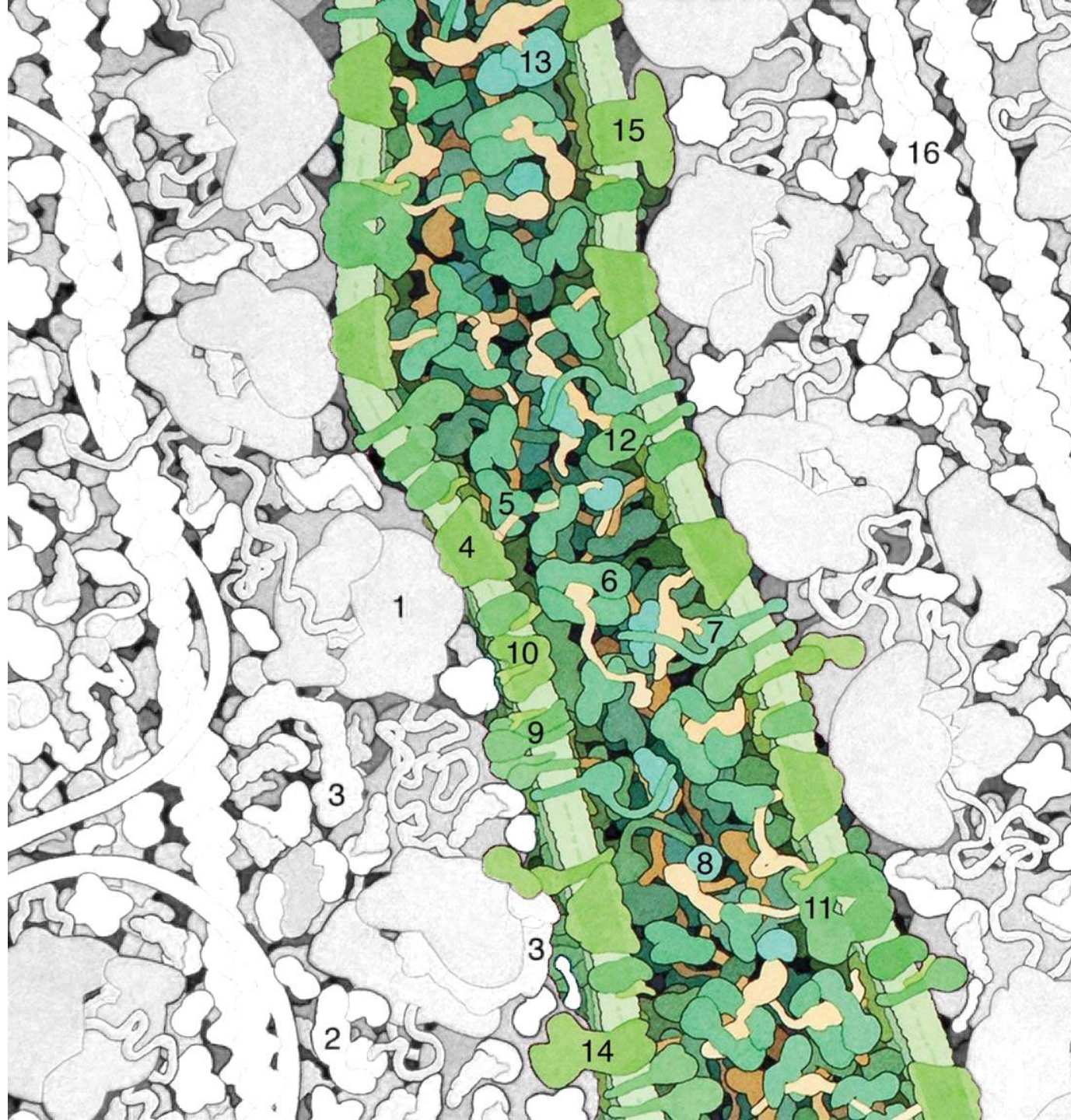
Nuclear Pore

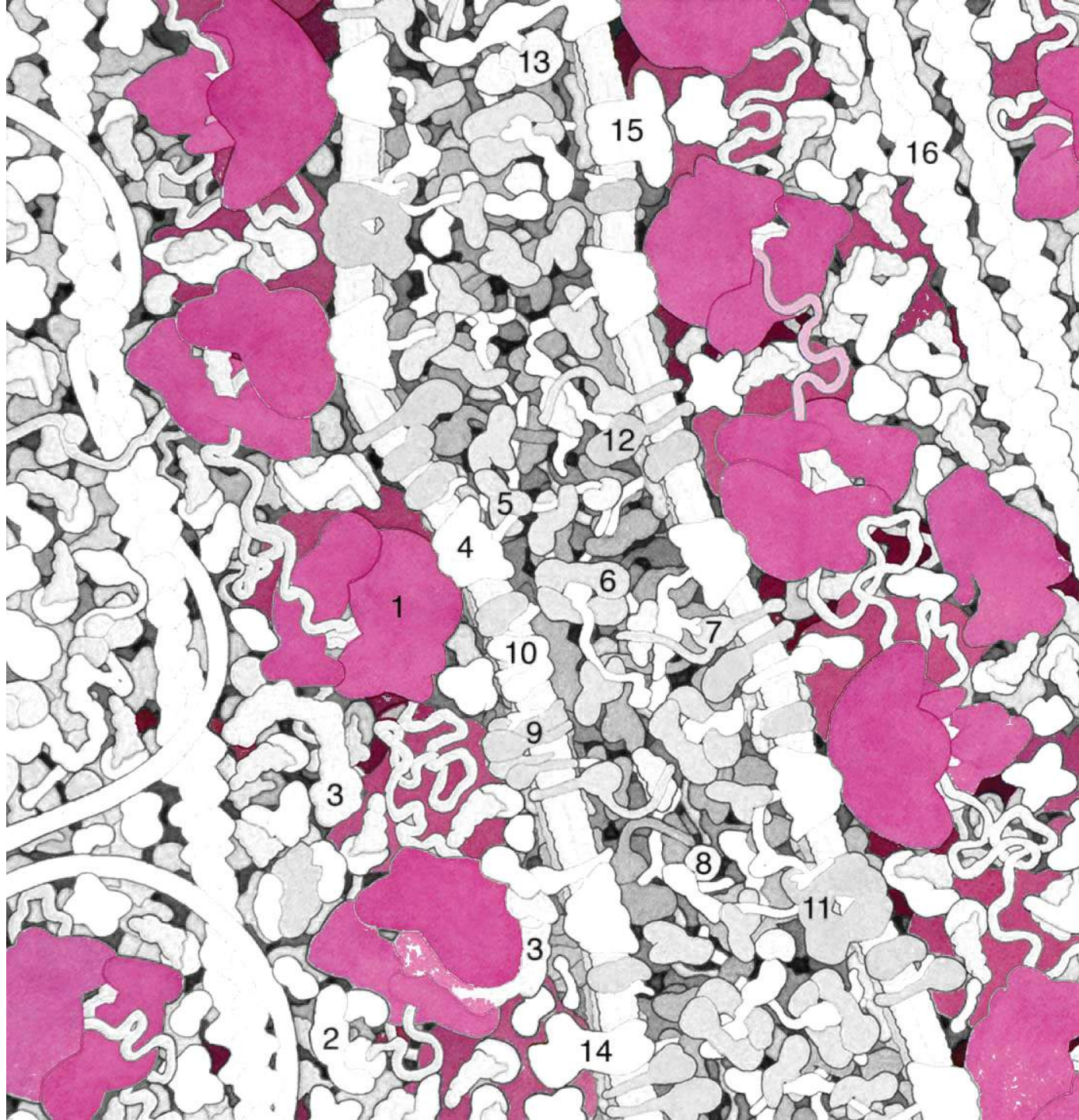


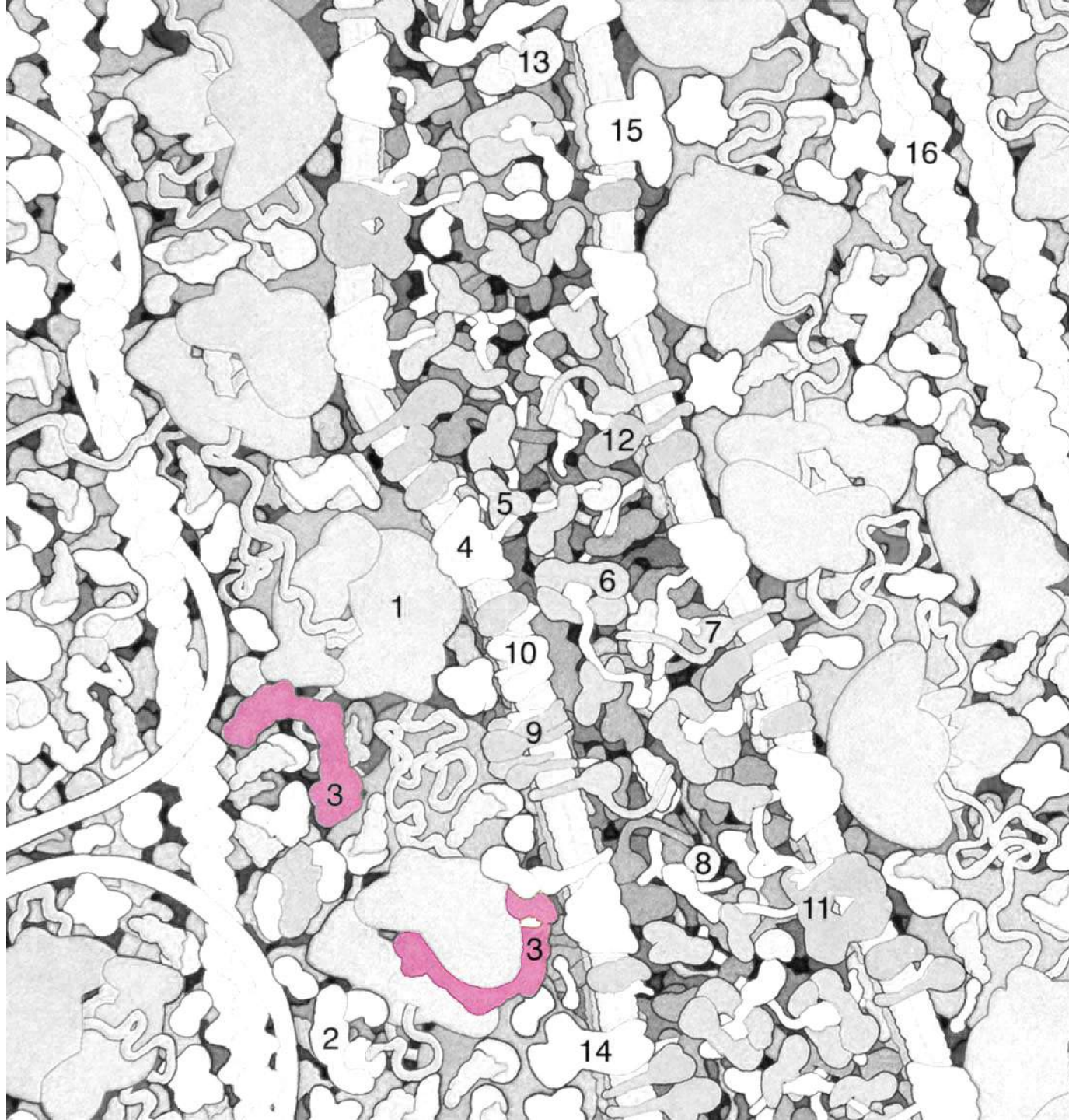


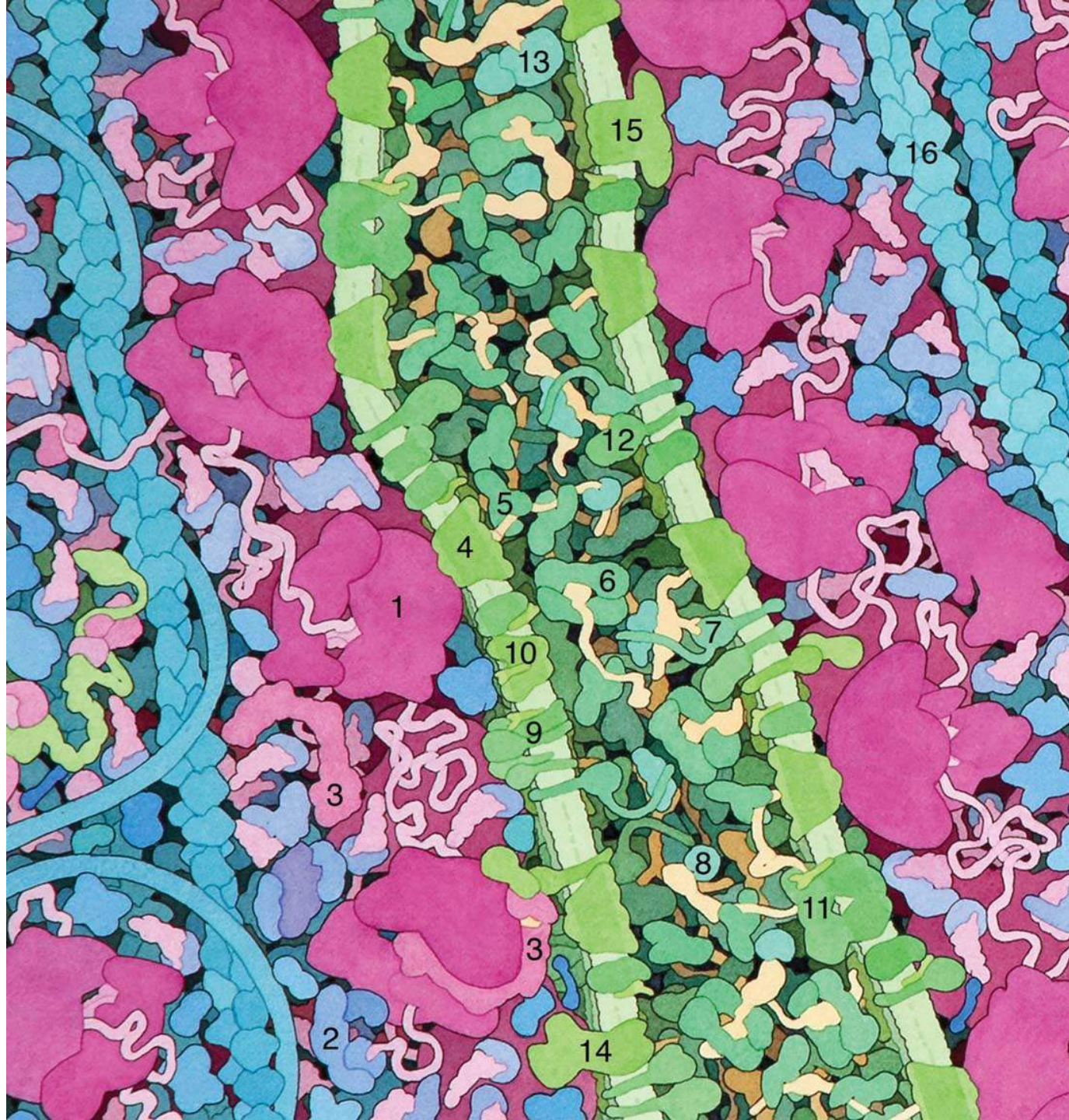
Rough Endoplasmic Reticulum





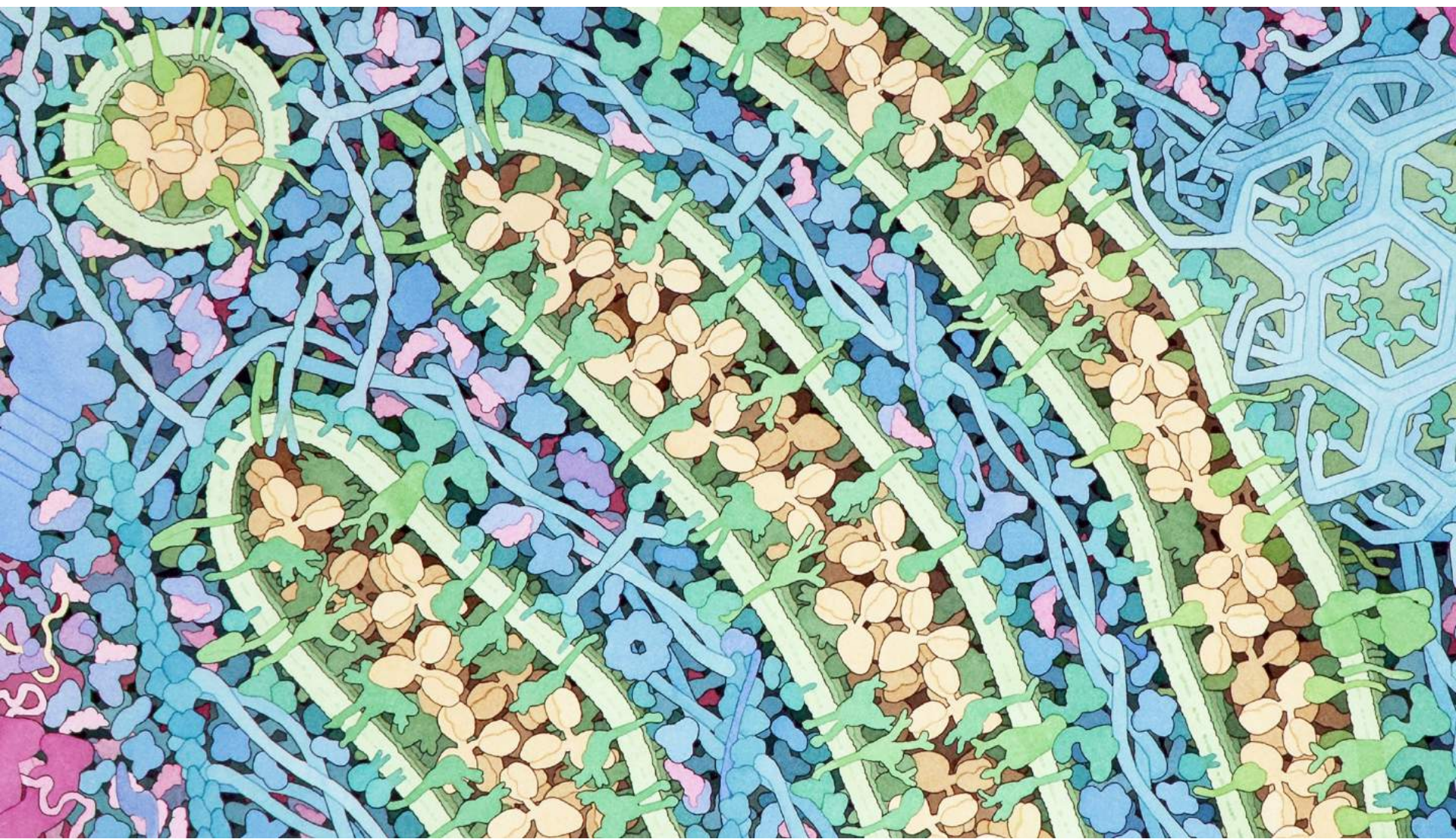




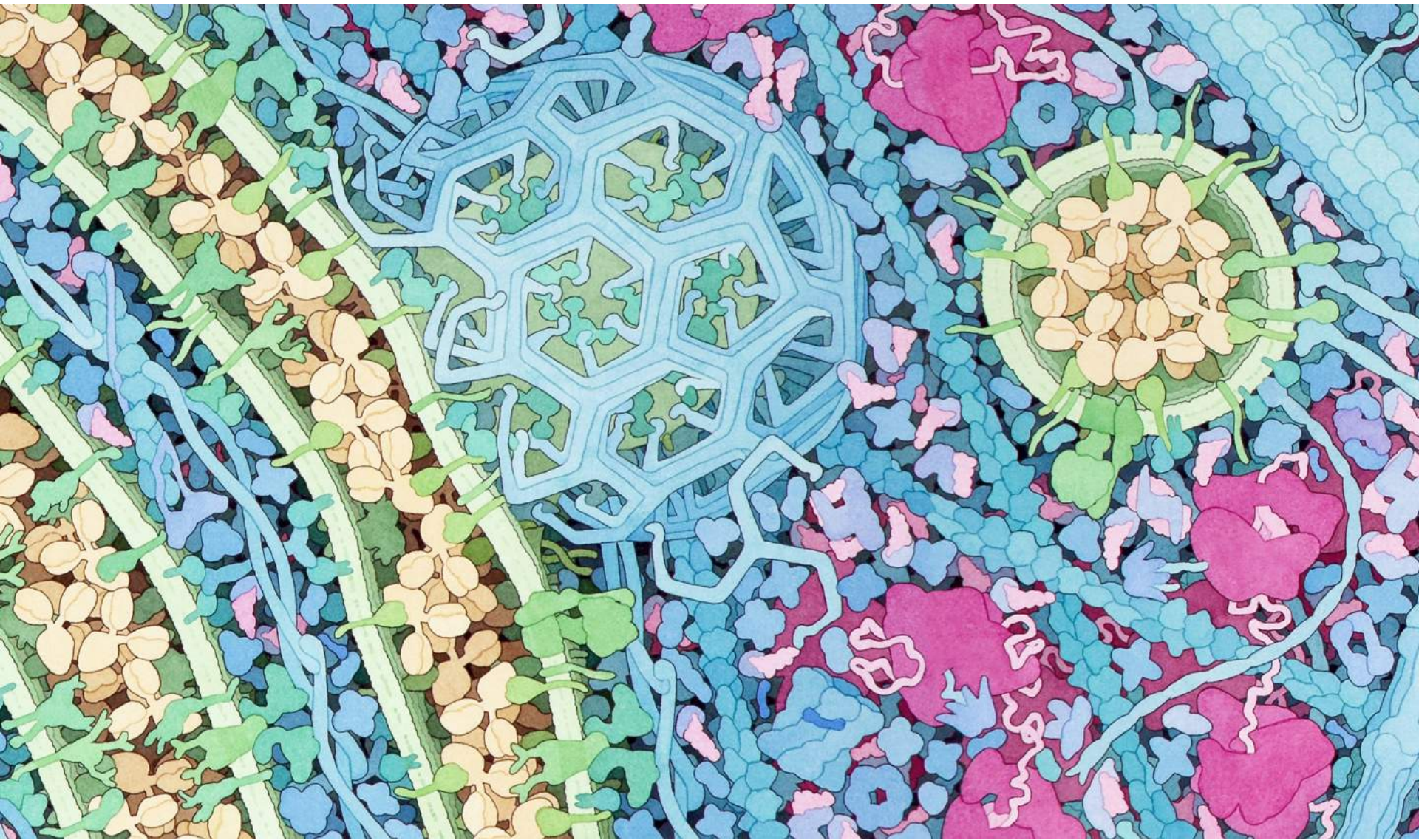


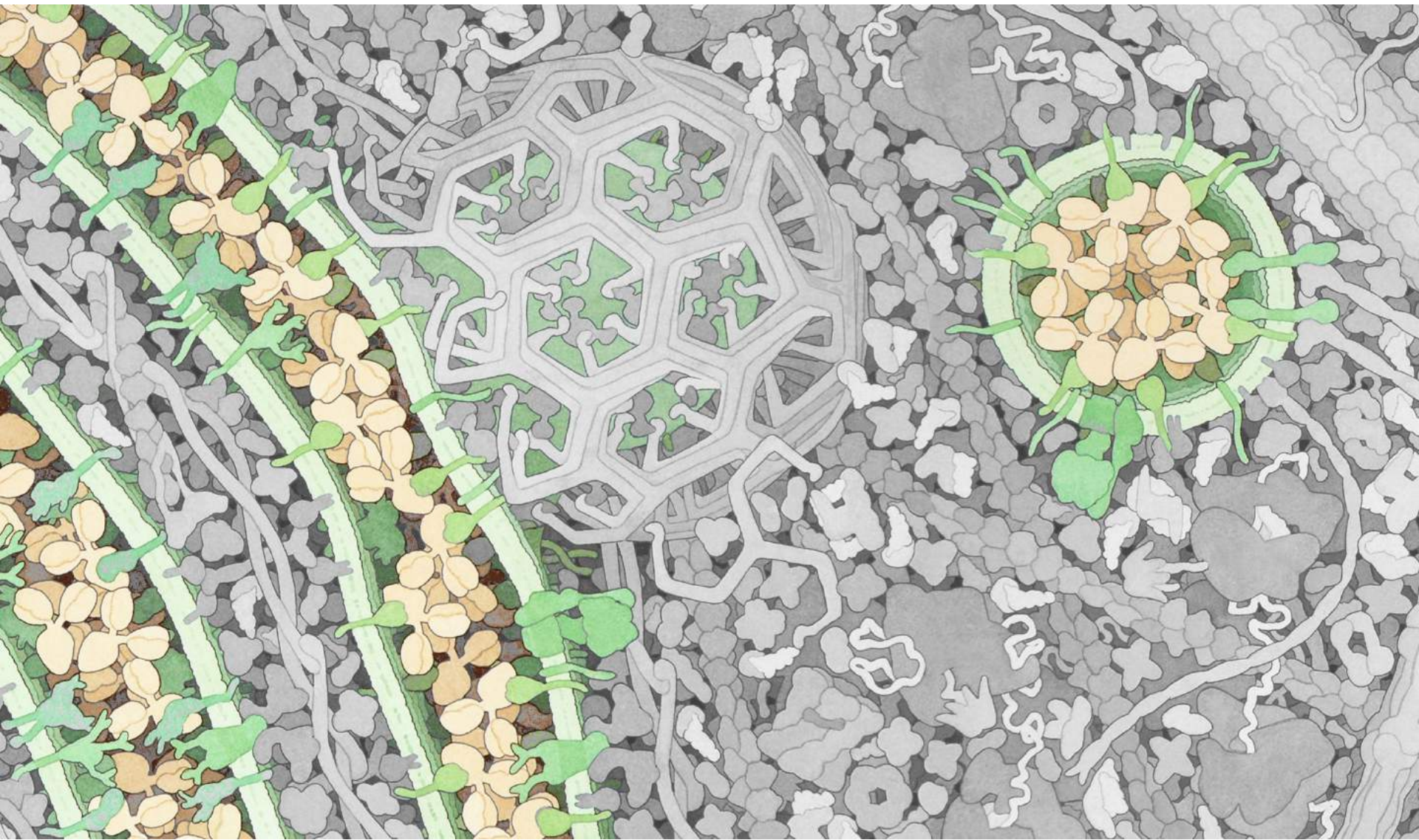


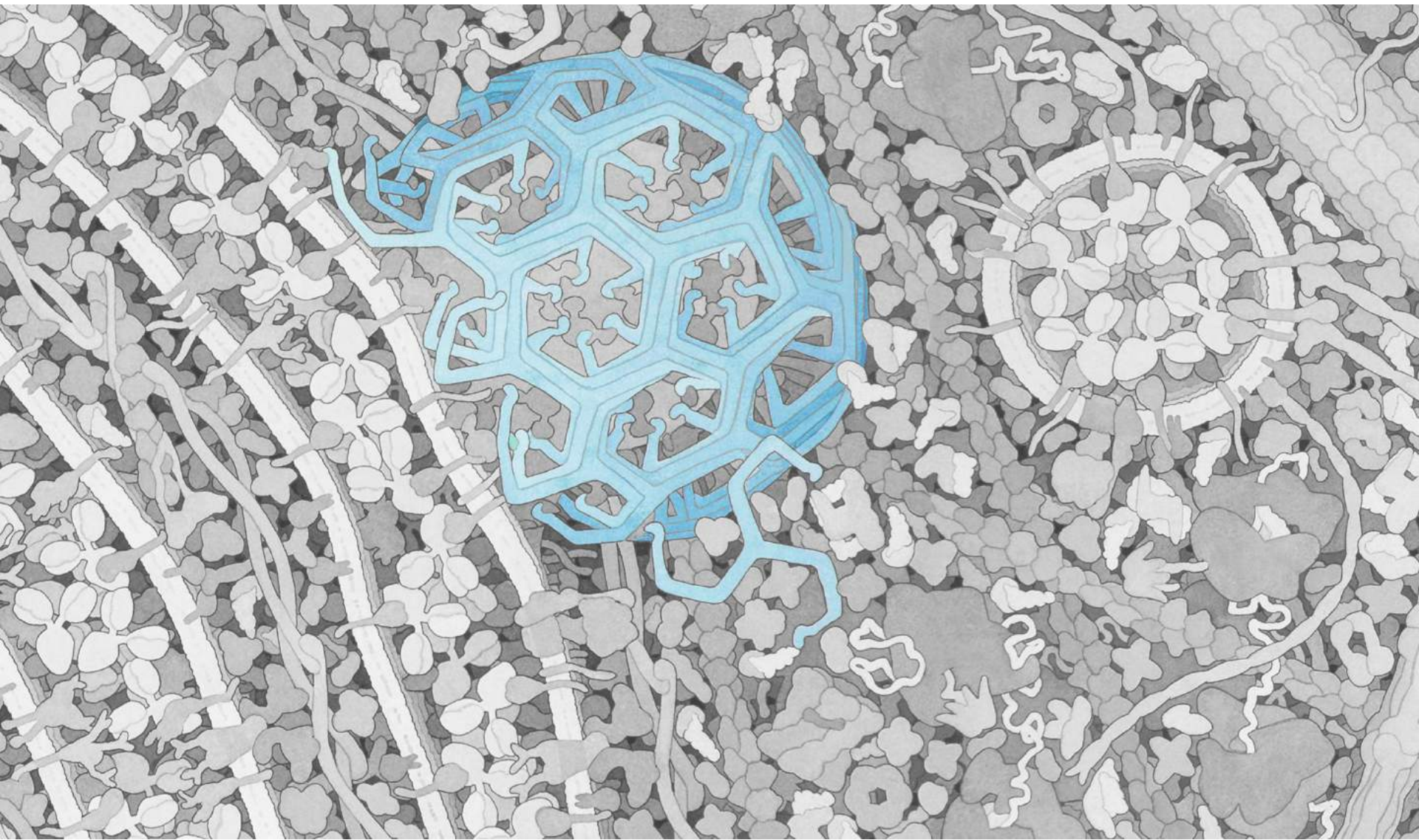
Golgi Apparatus

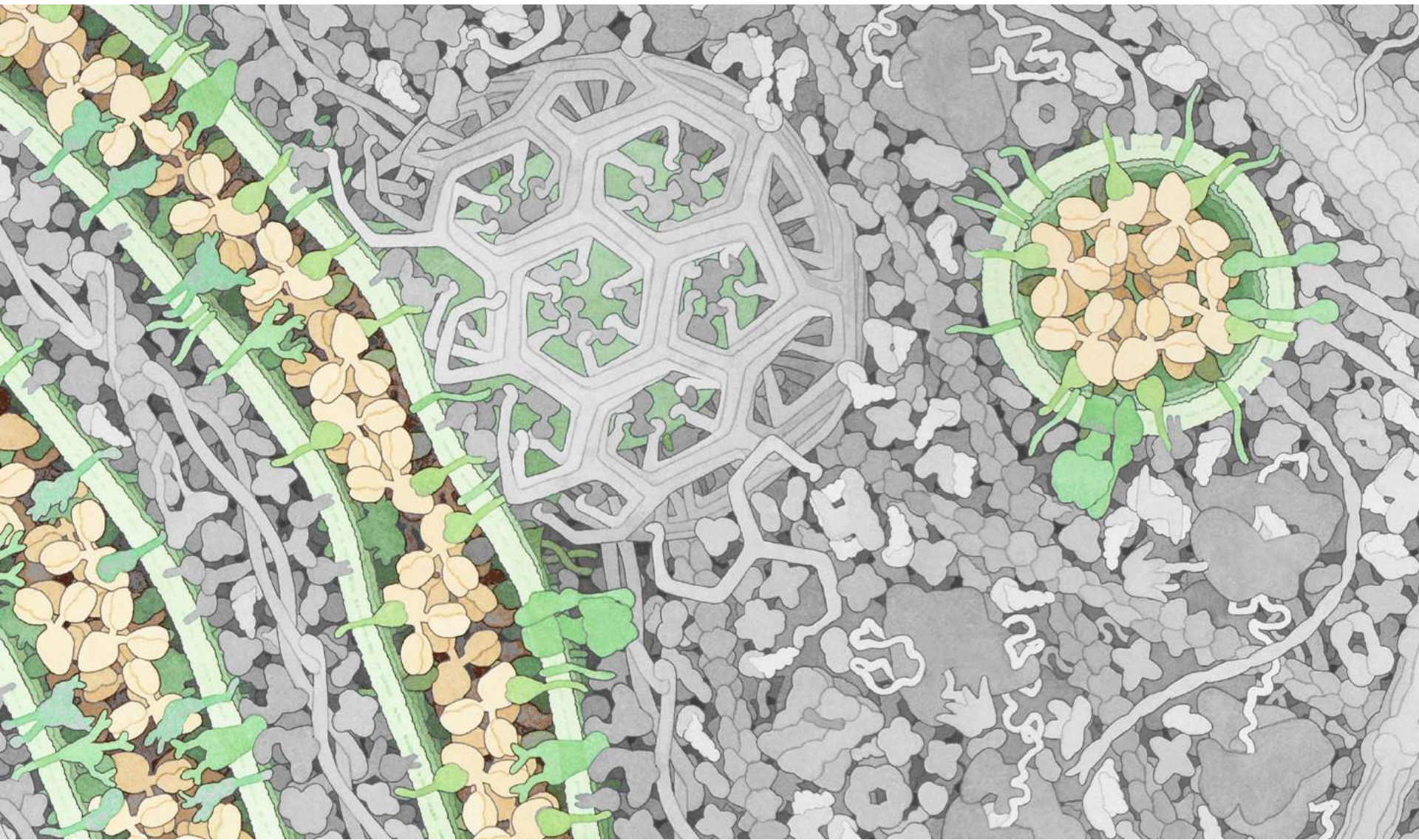


Clathrin Coated Vesicle

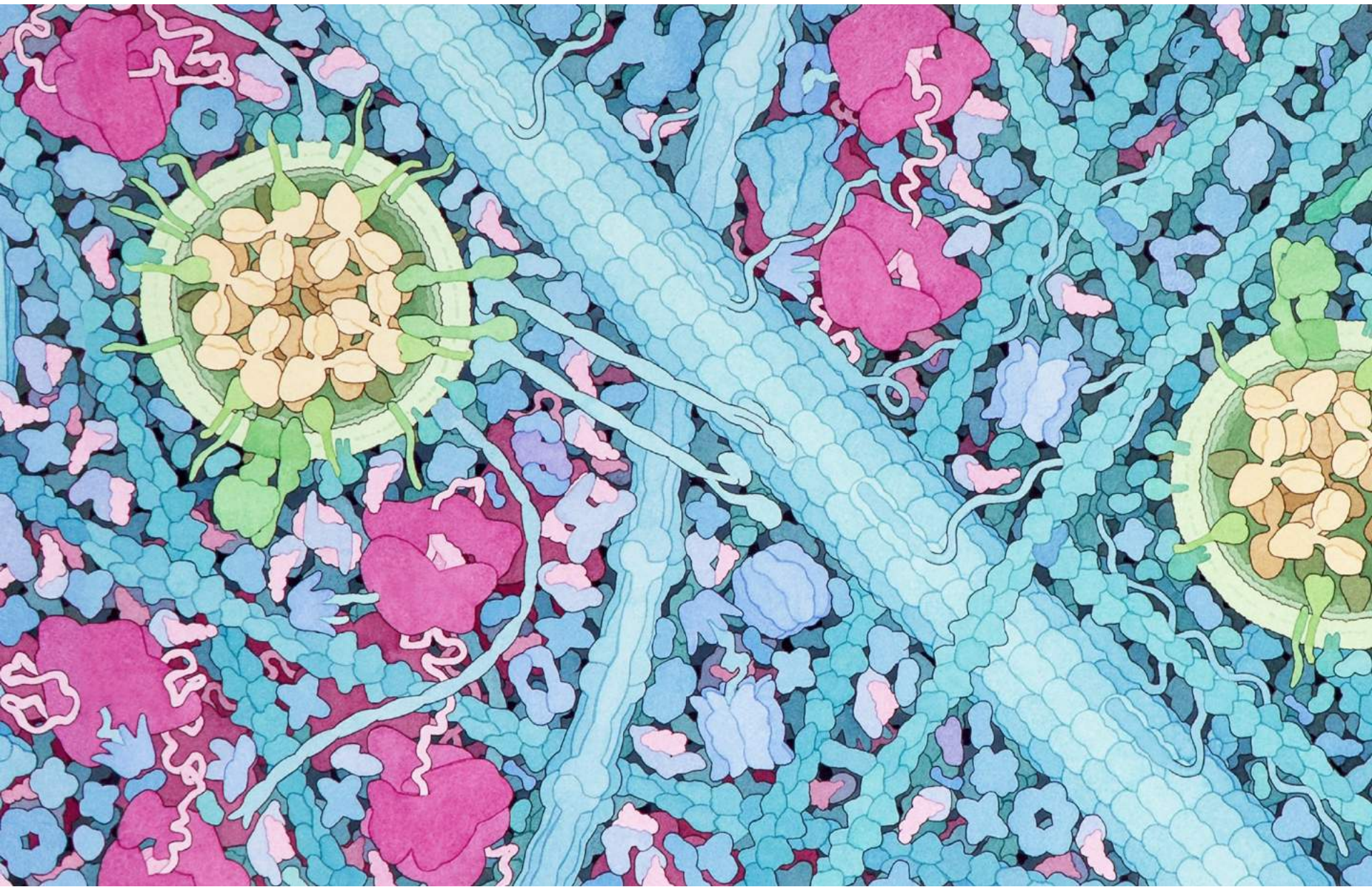


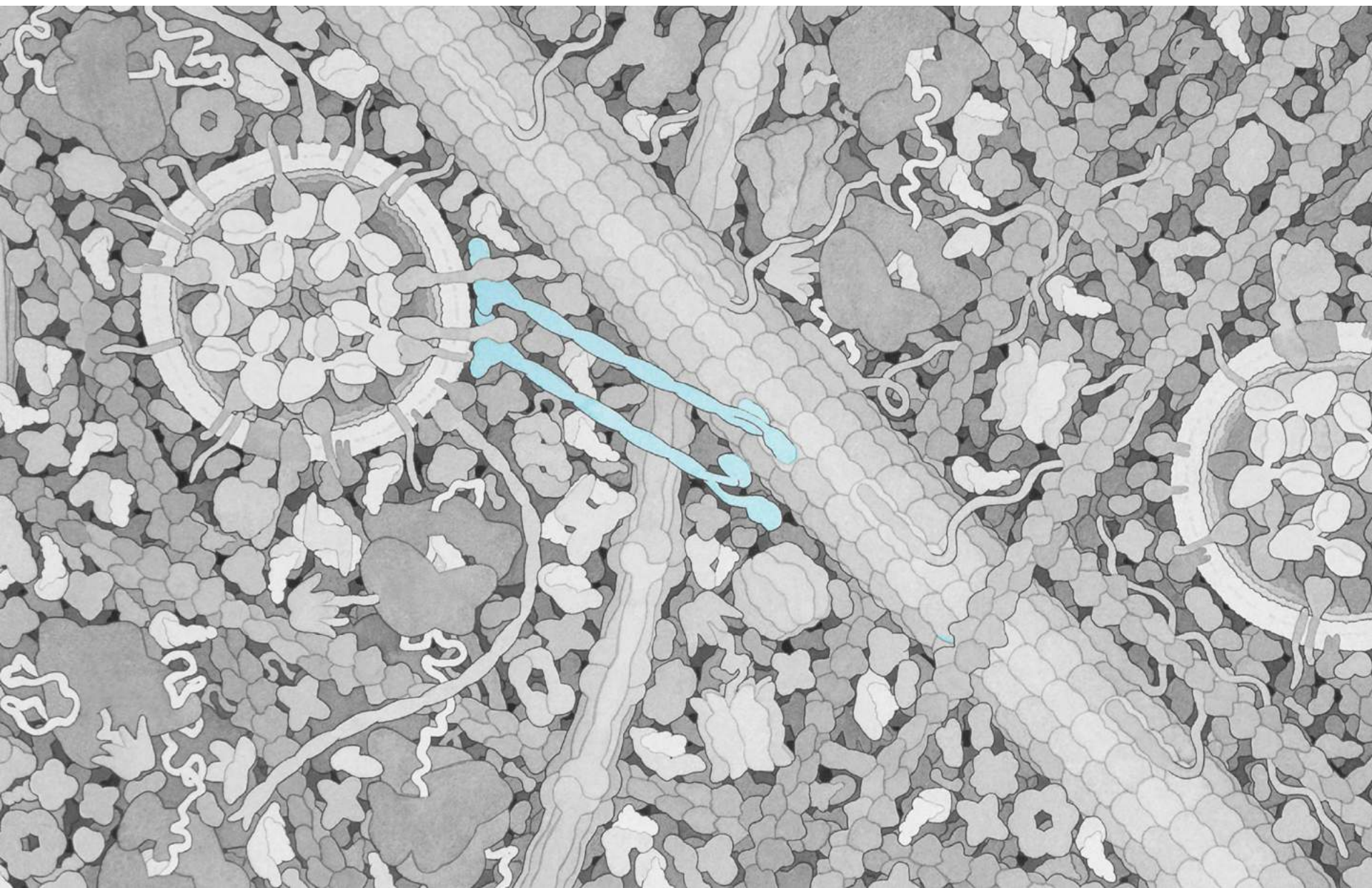


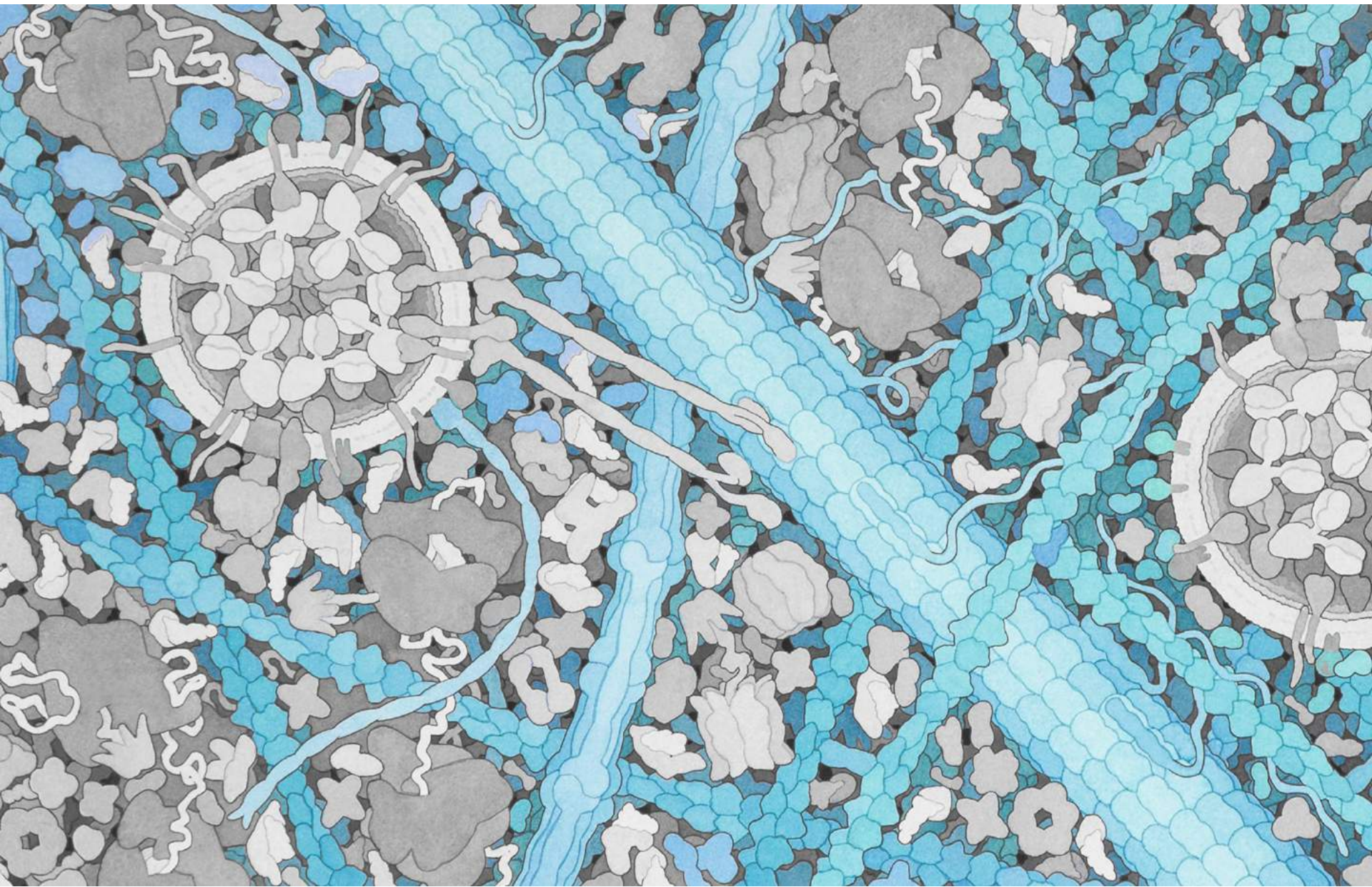


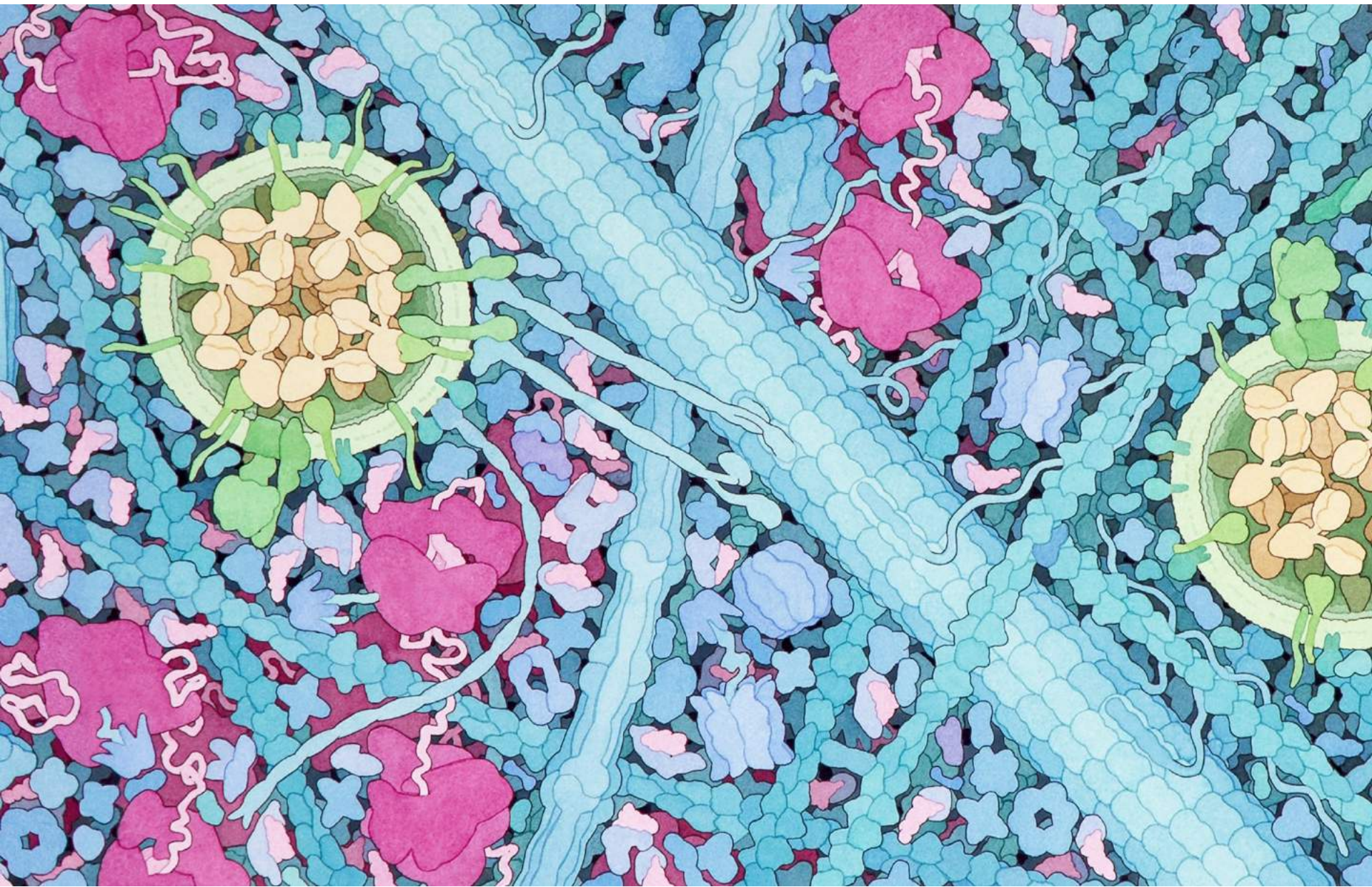


Cytoskeleton



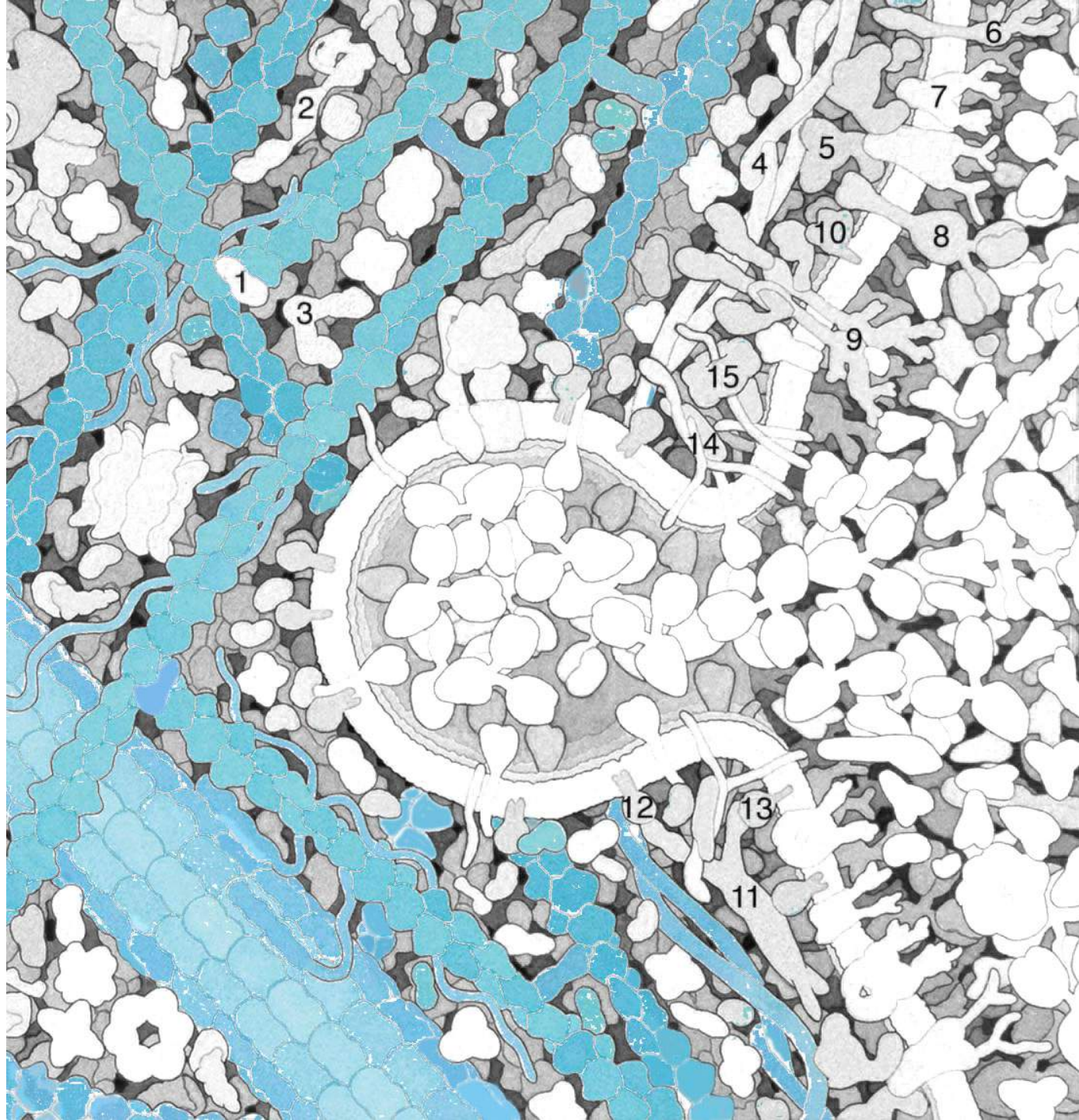


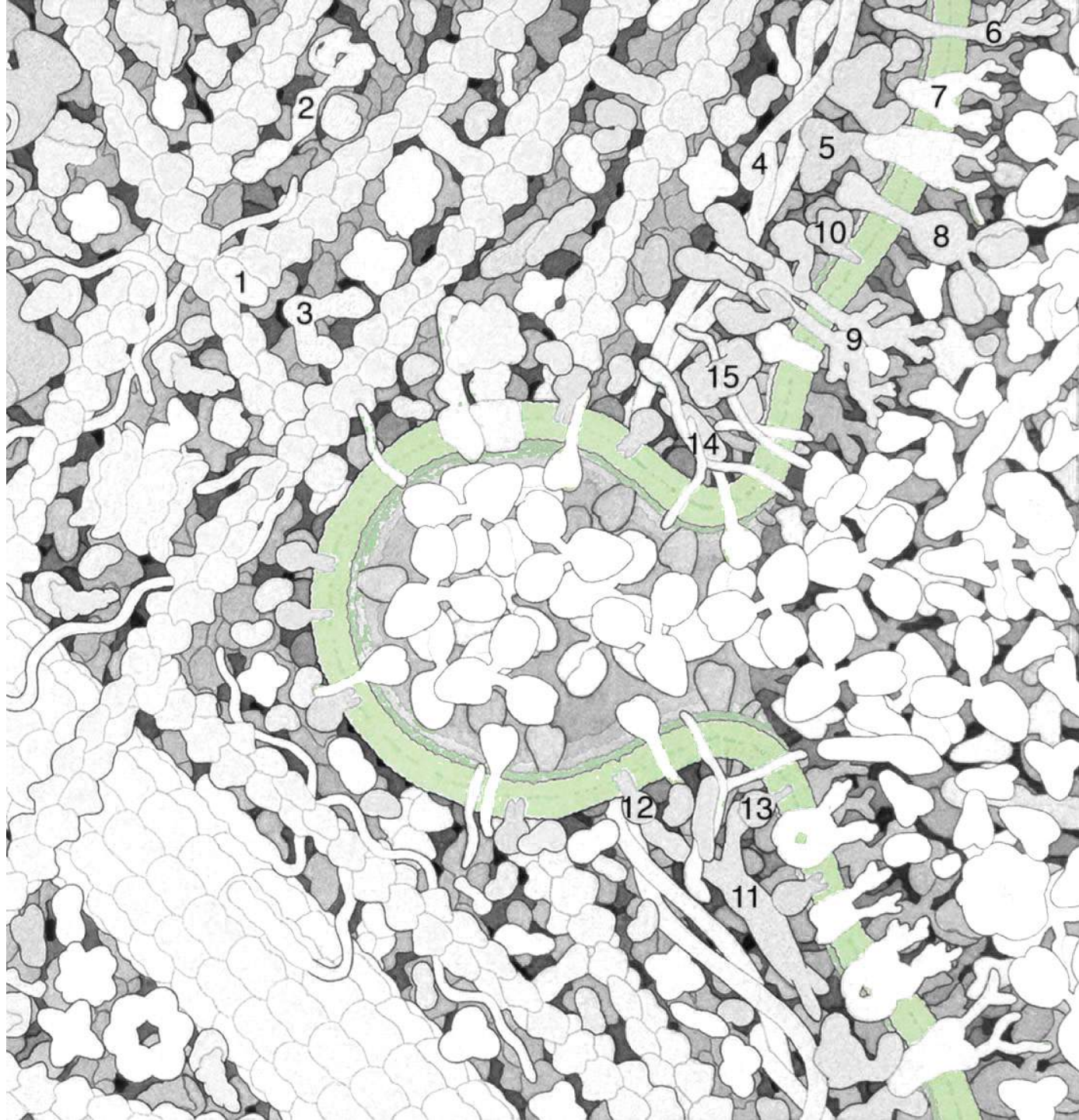


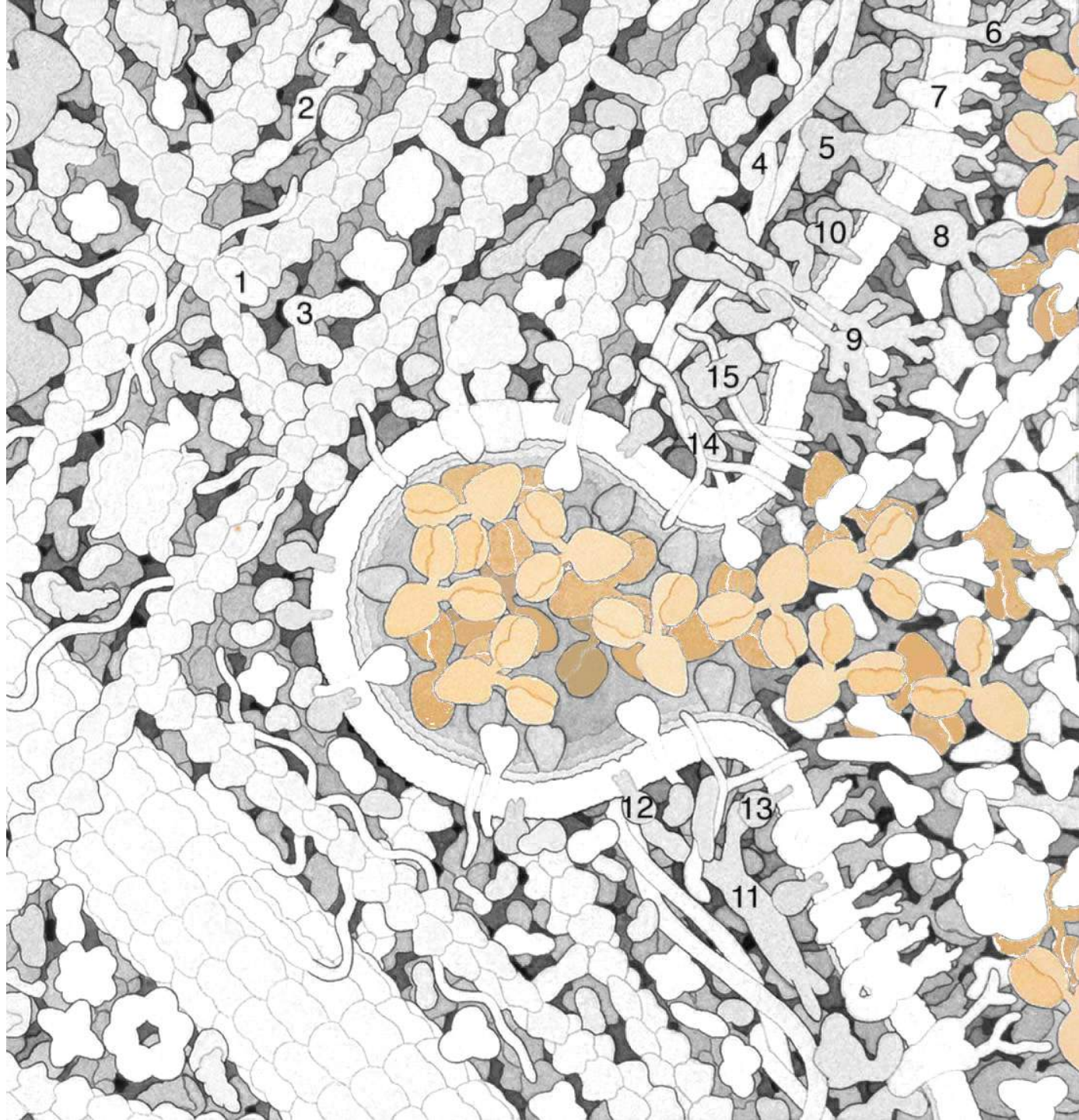


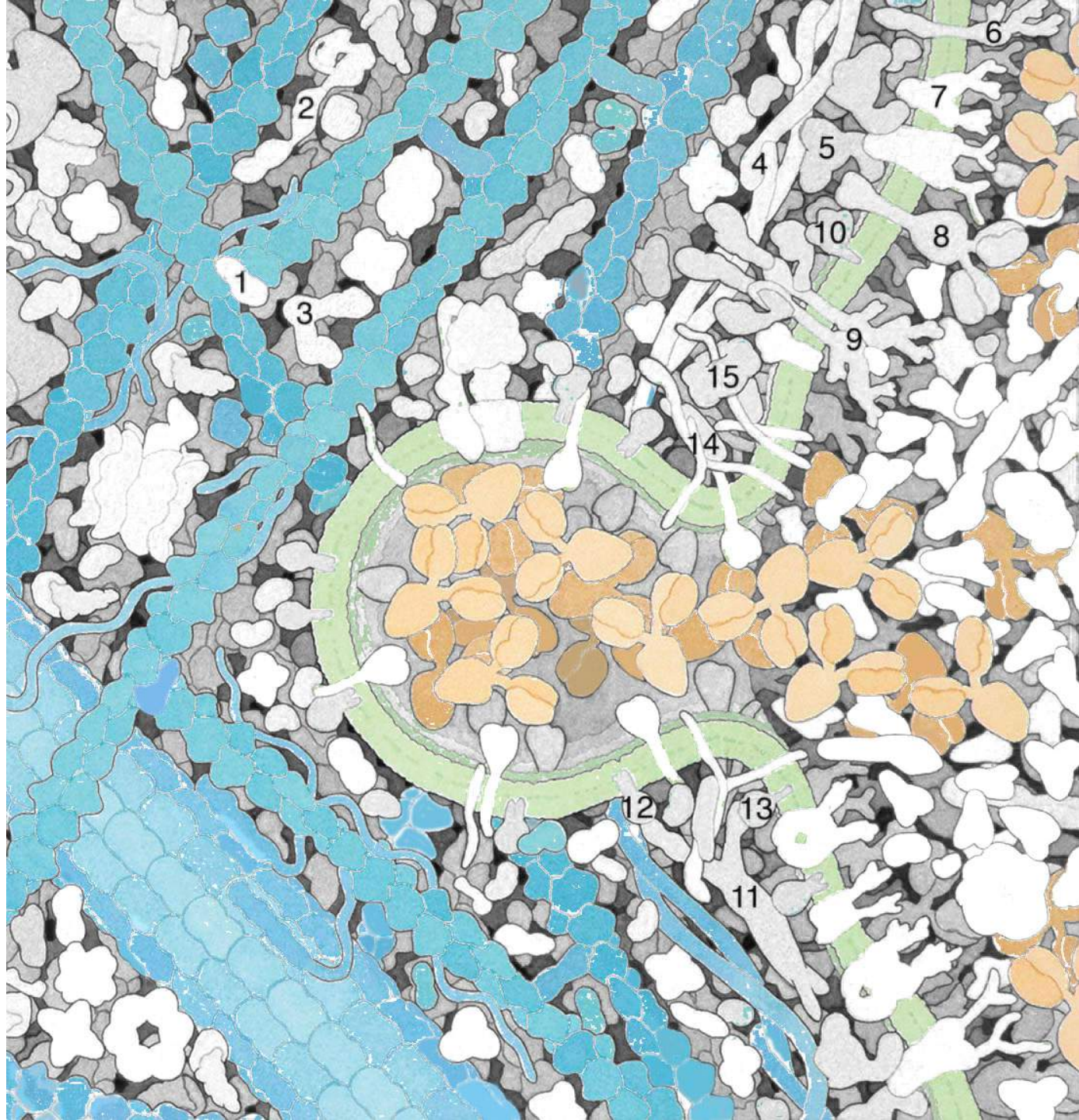
Plasma Membrane





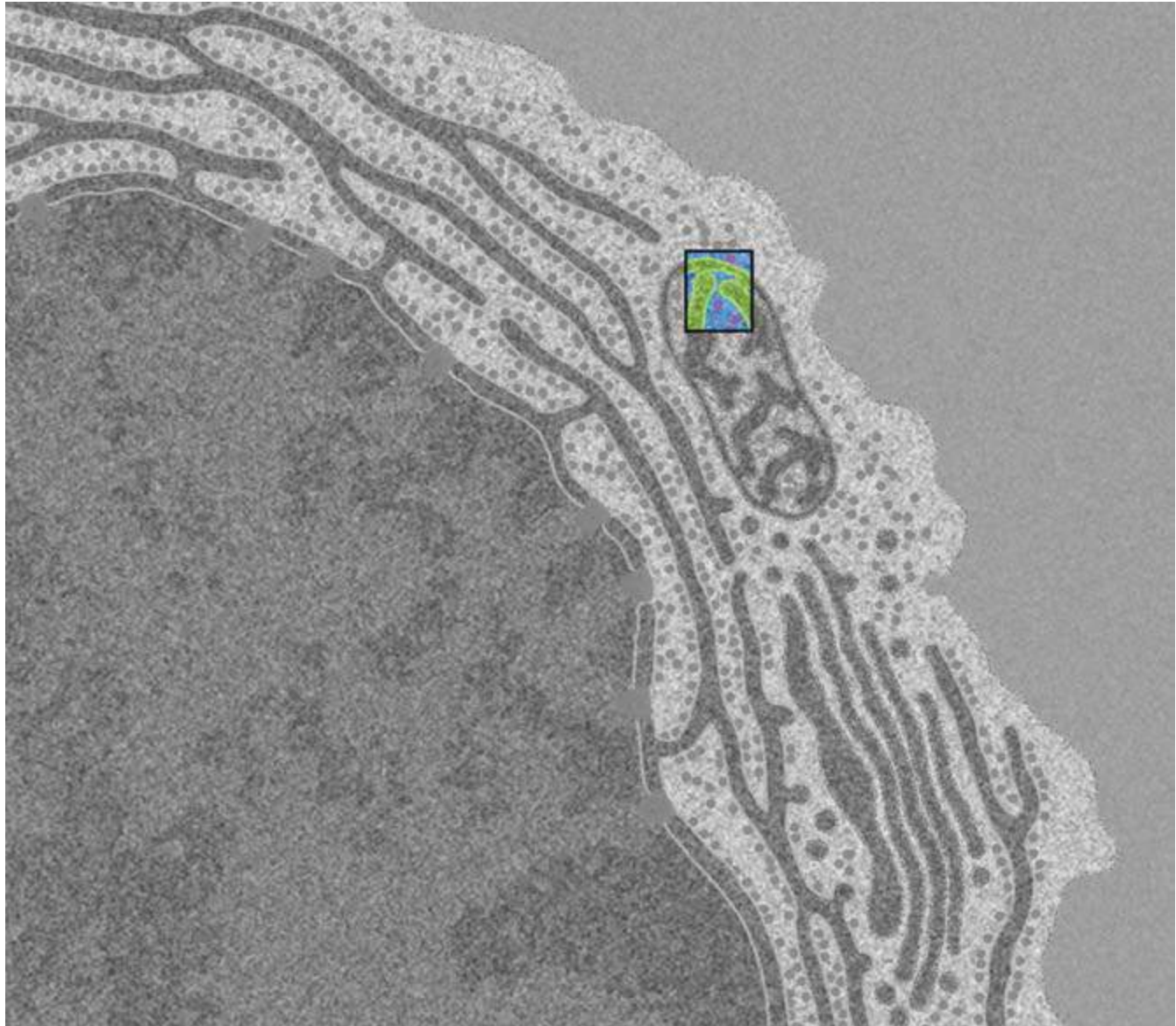


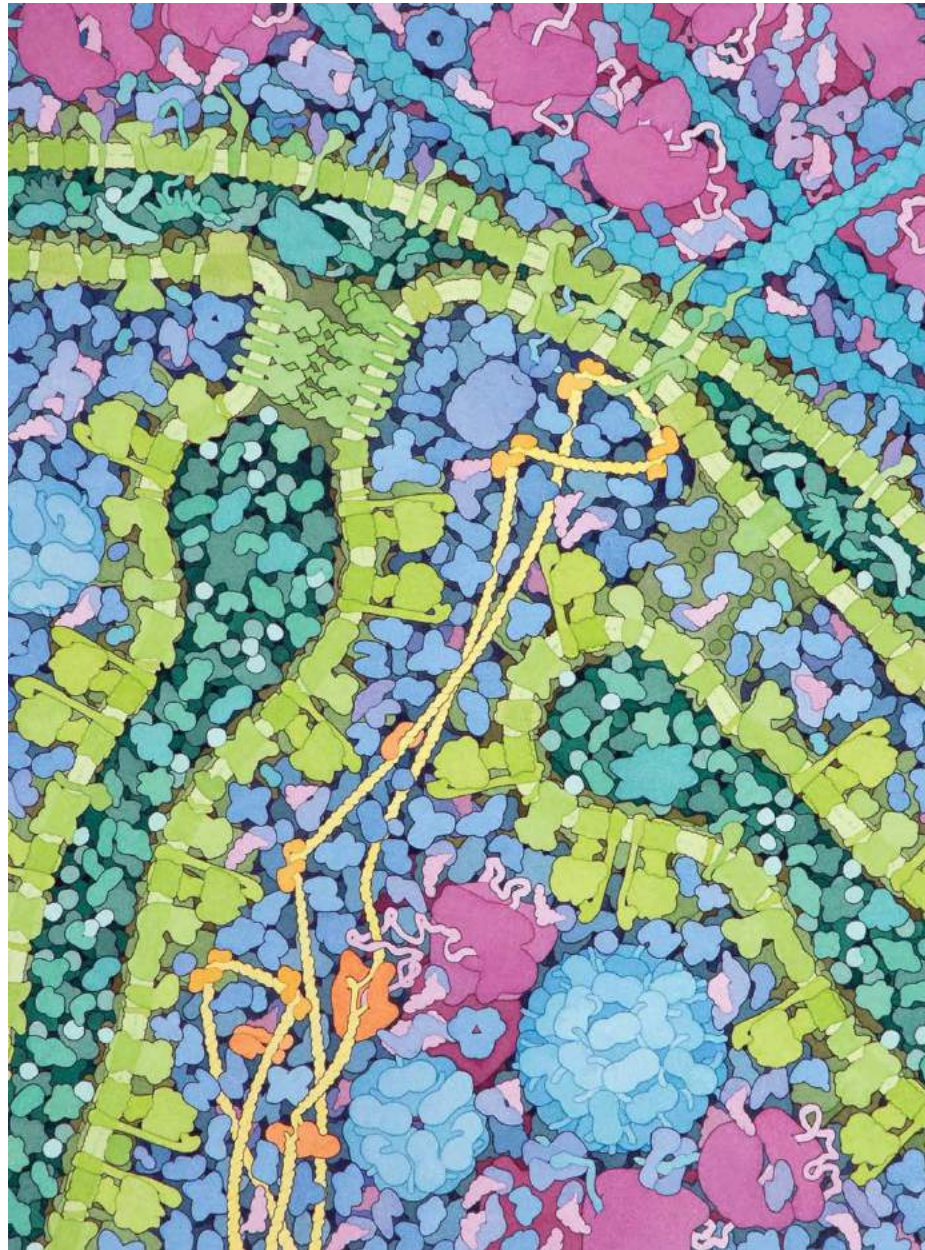


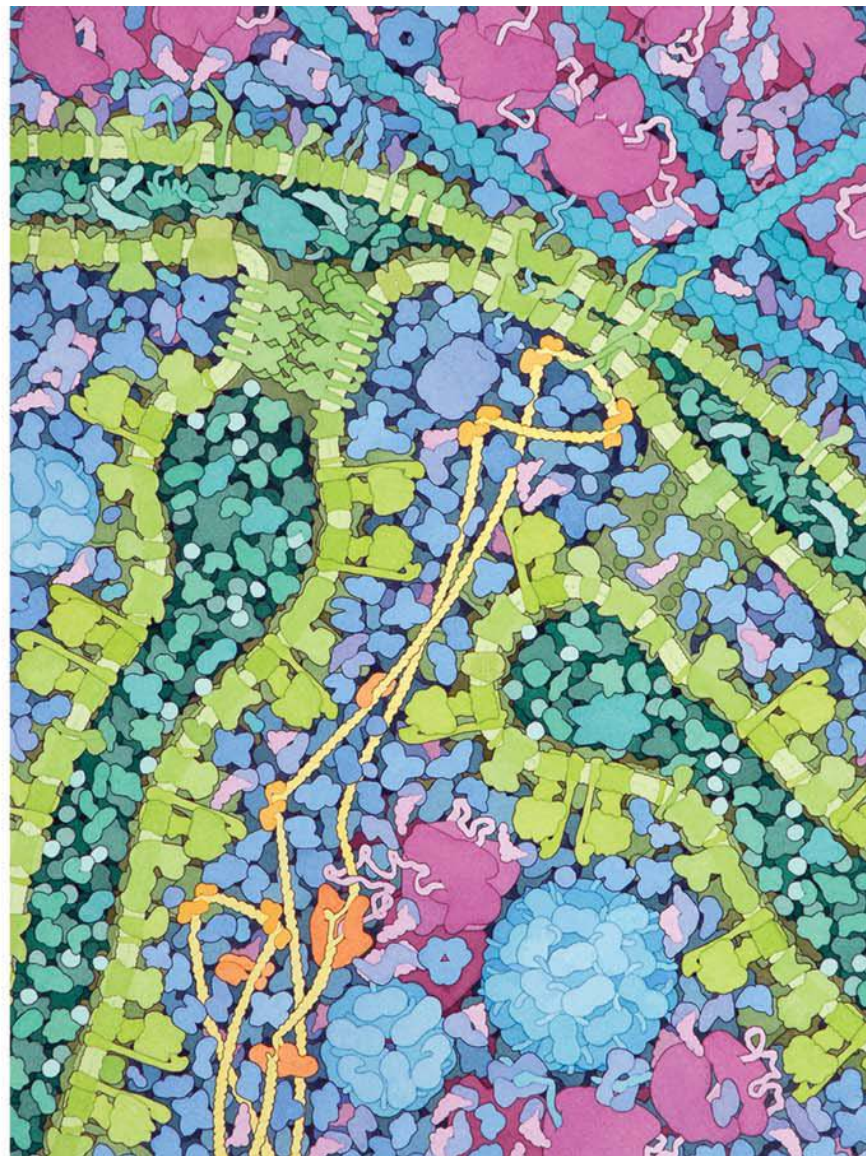
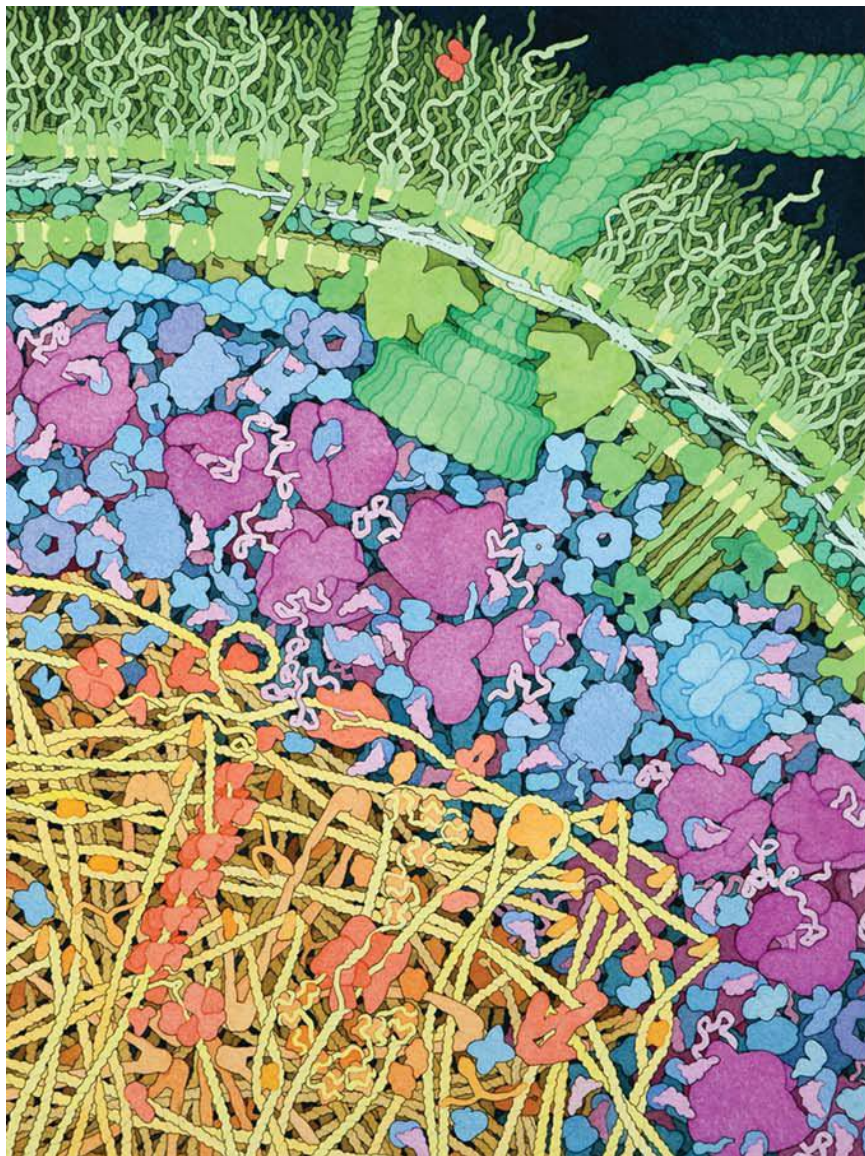


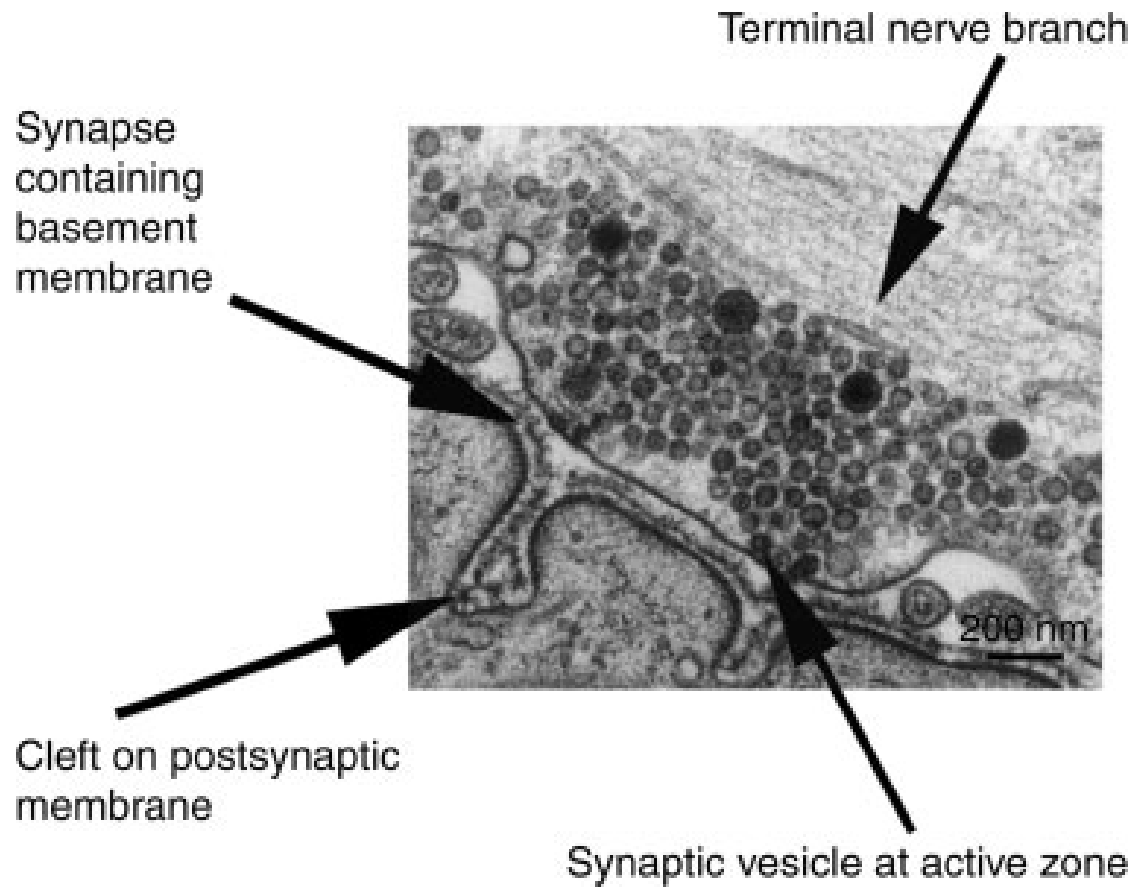


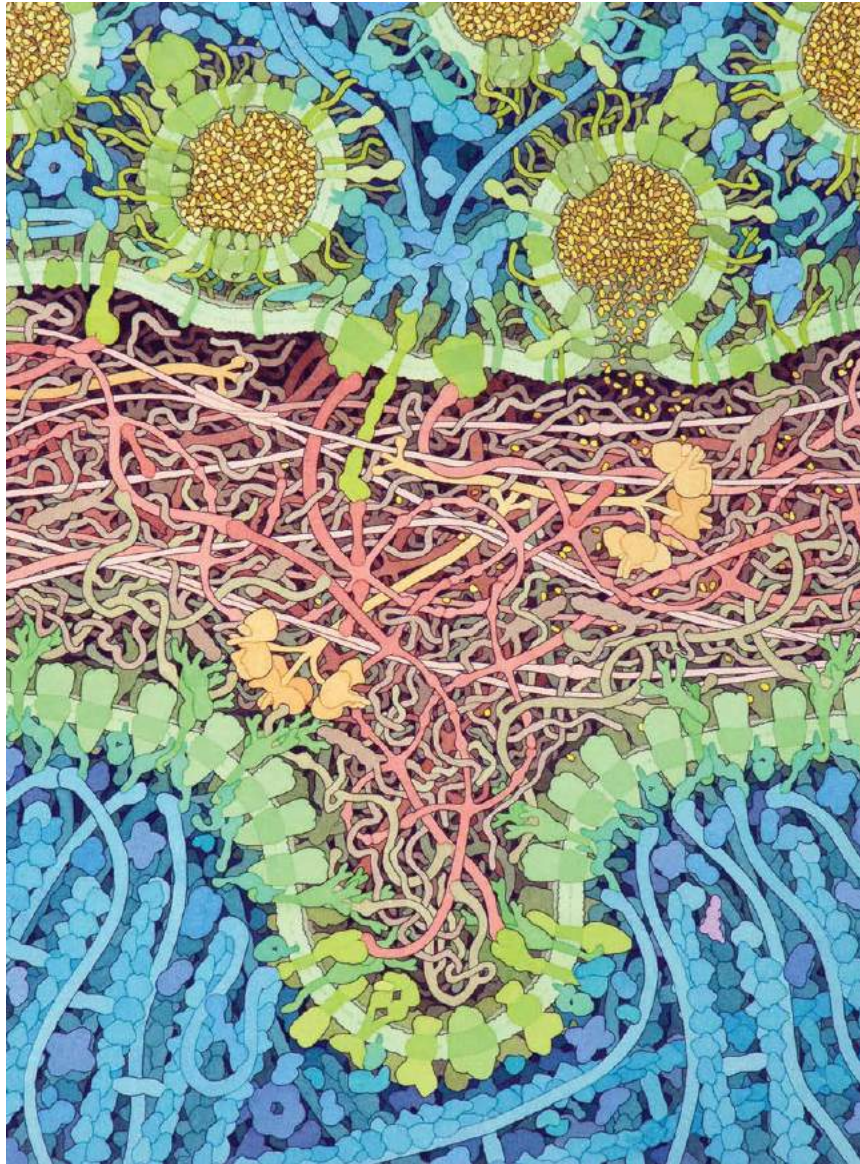
Mitochondrion











Using Landscapes in the Classroom

- Where are we in the cell?
- Endomembrane system
- Flow of genetic information
- Compare/contrast prokaryotic/eukaryotic cells
 - RNA polymerase
 - Membranes
 - Ribosomes (where is Waldo?)
 - ATP synthase