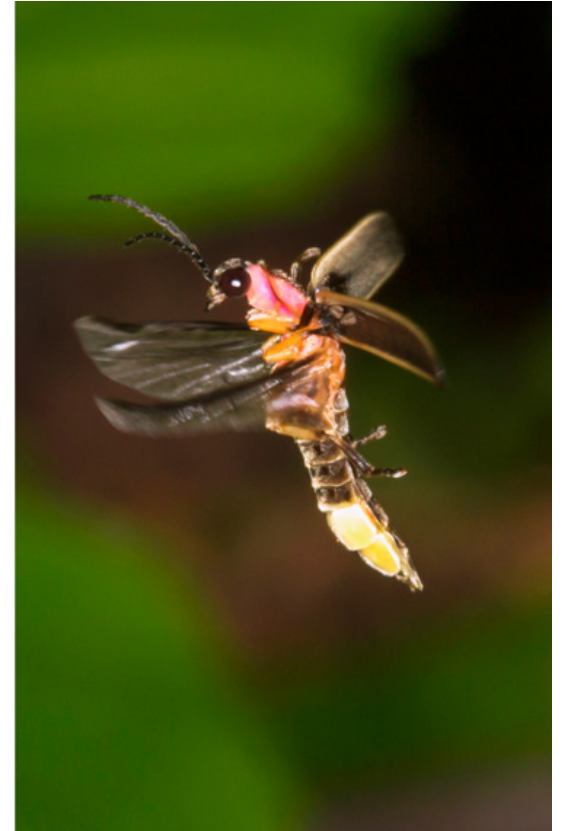
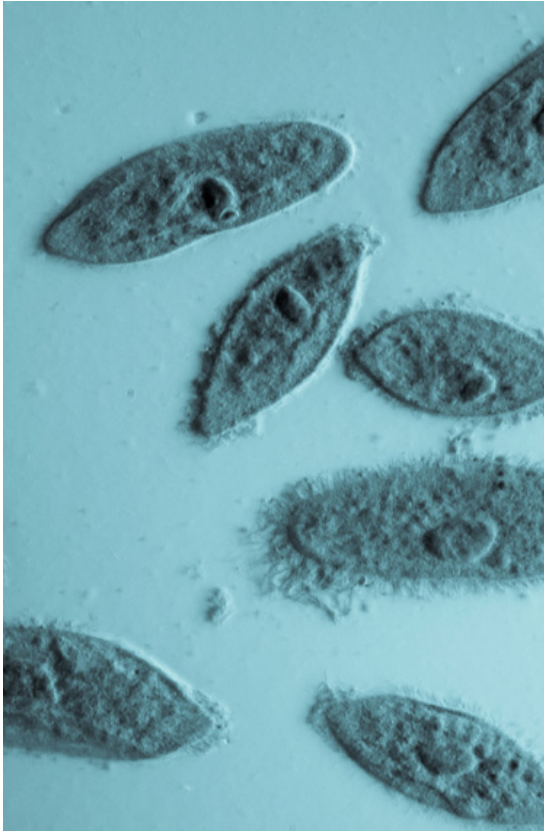
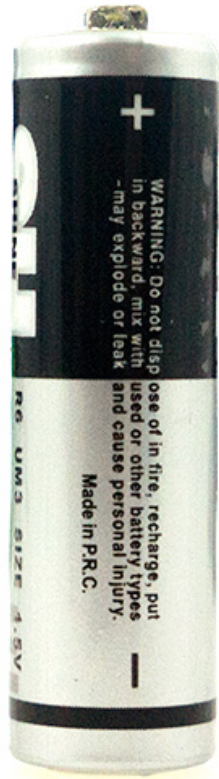


ATP

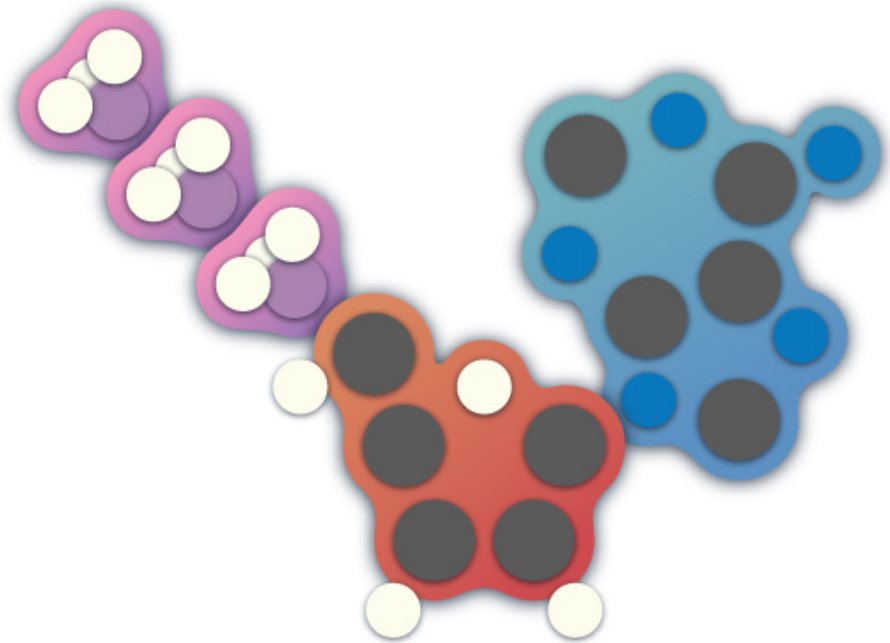
Fuel for cells



ATP molecules inside cells hold energy—
much like batteries do



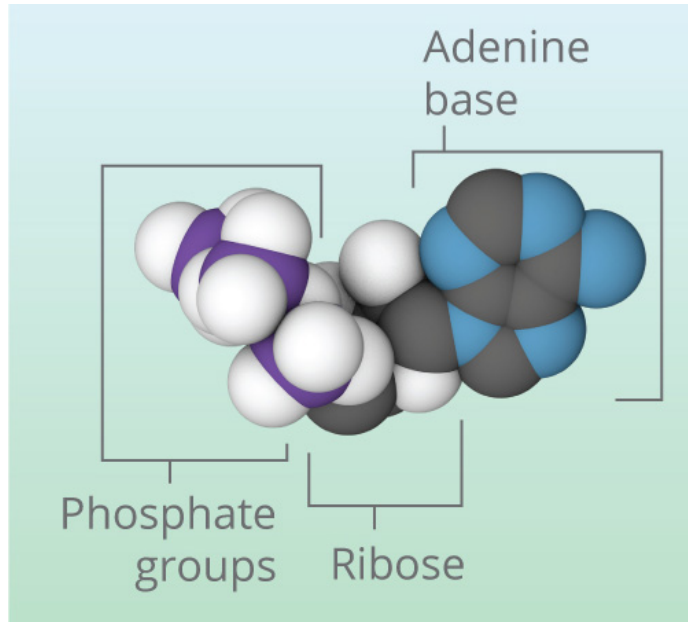
Battery



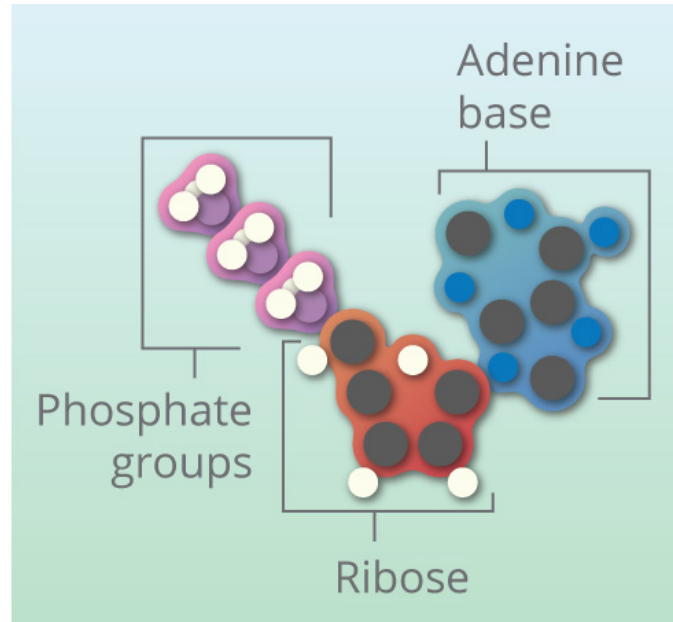
ATP



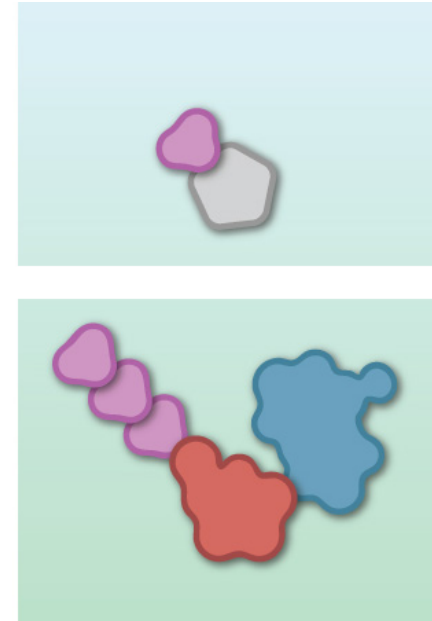
Multiple ways to show ATP



3D model based on molecular structure



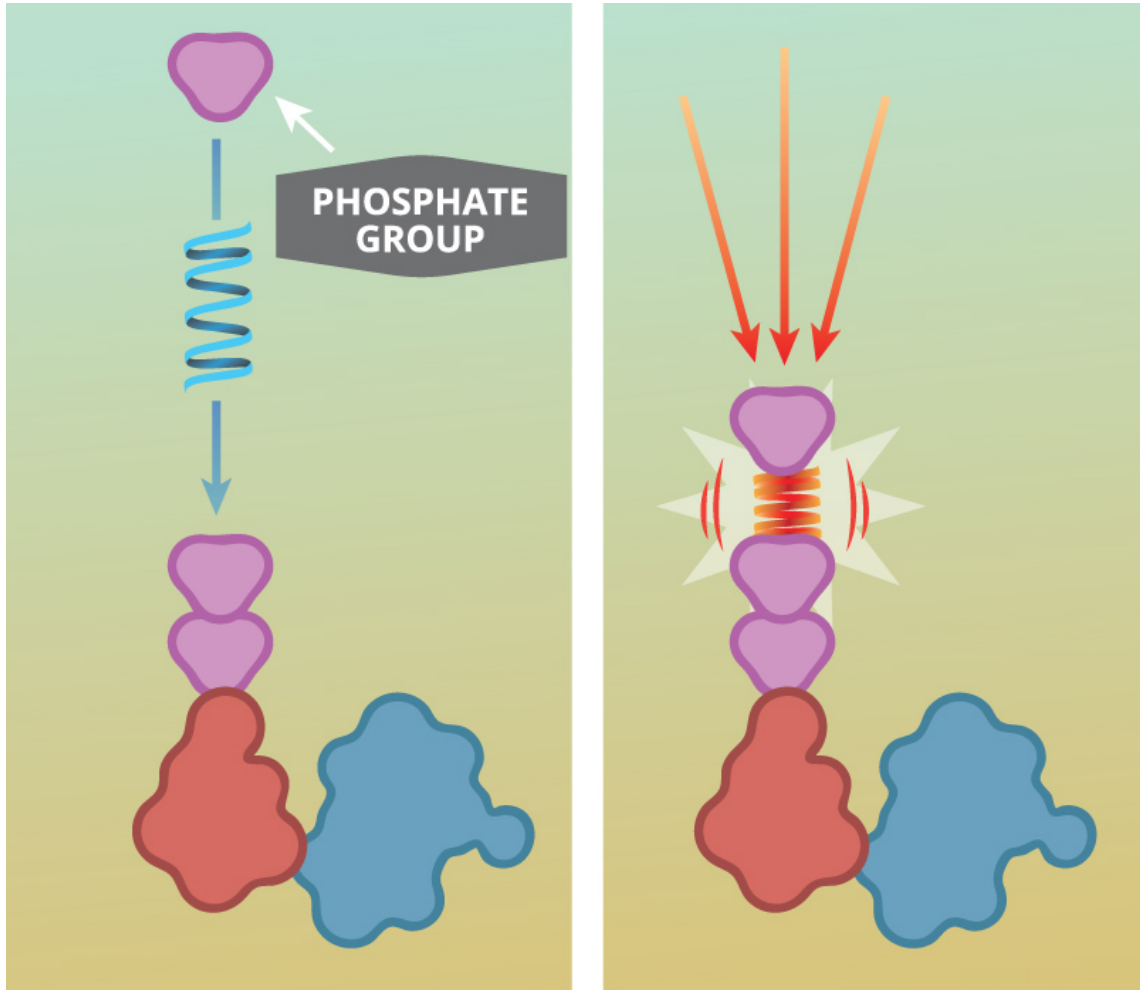
2D model highlighting atoms (carbon, oxygen, nitrogen, phosphorus)



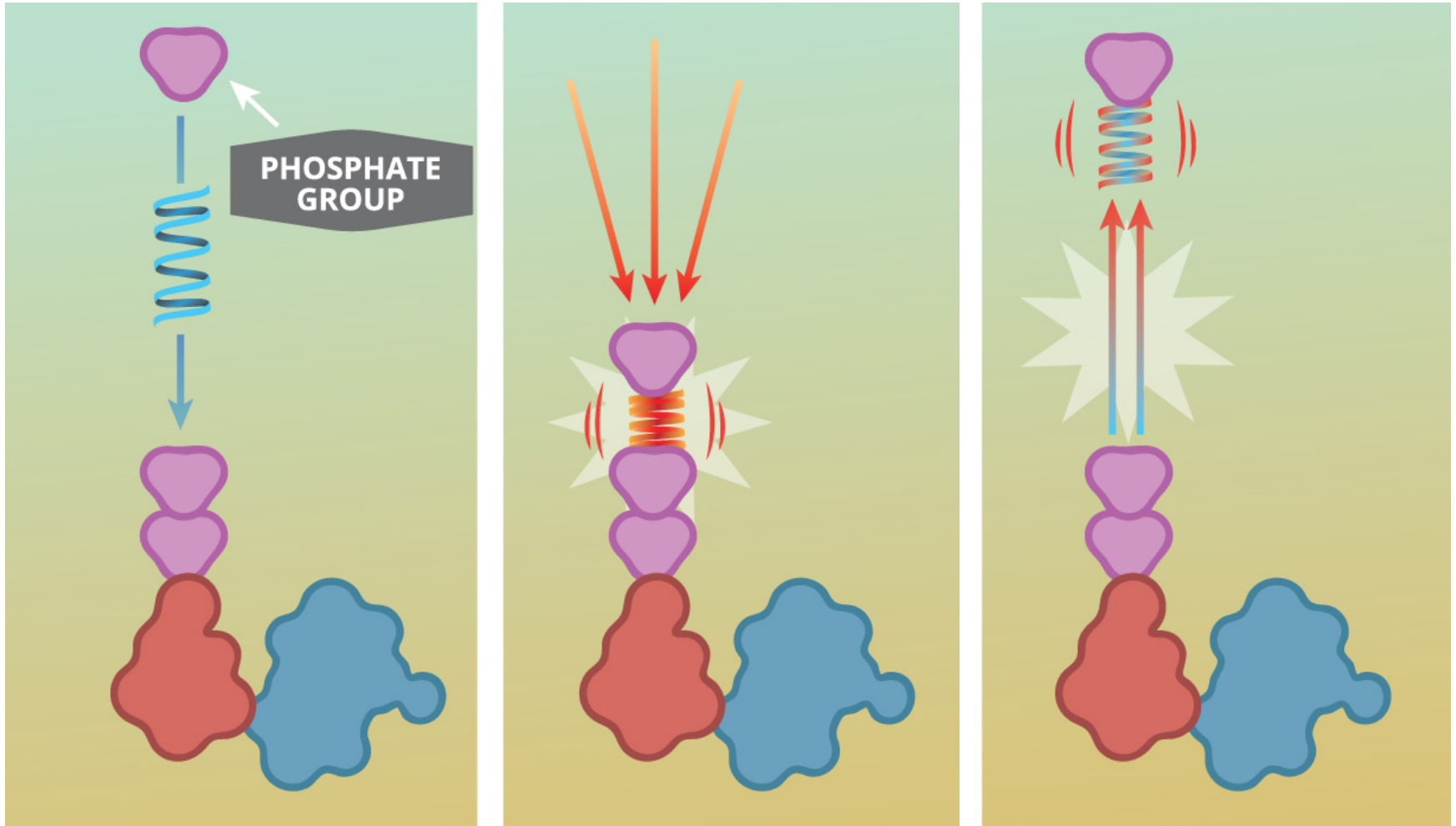
Simplified 2D models



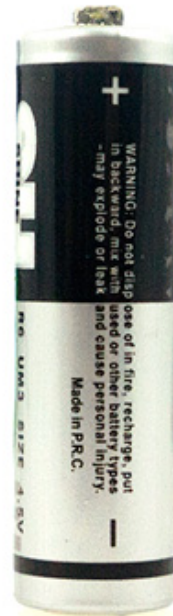
ATP holds energy in chemical bonds between its phosphate groups



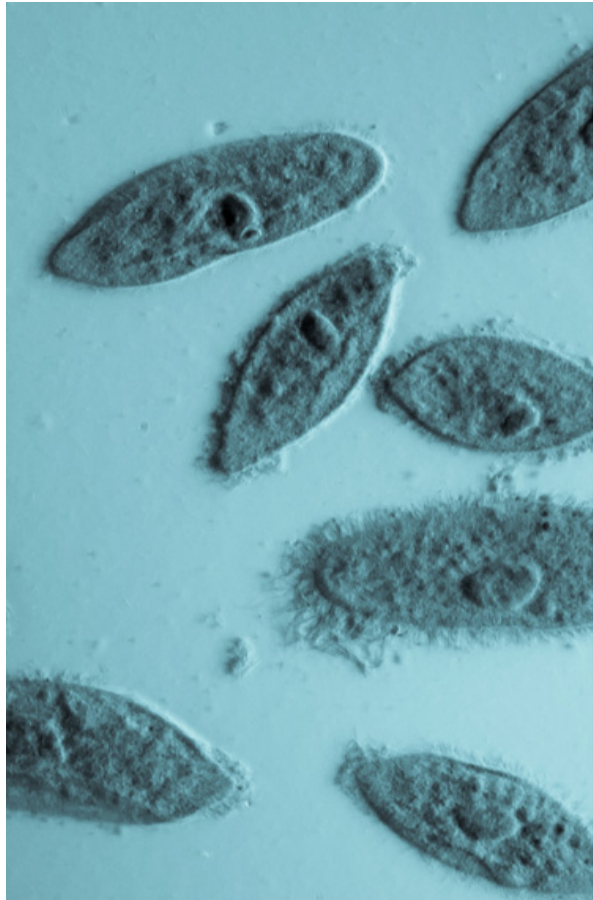
When the chemical bond is broken,
energy is released



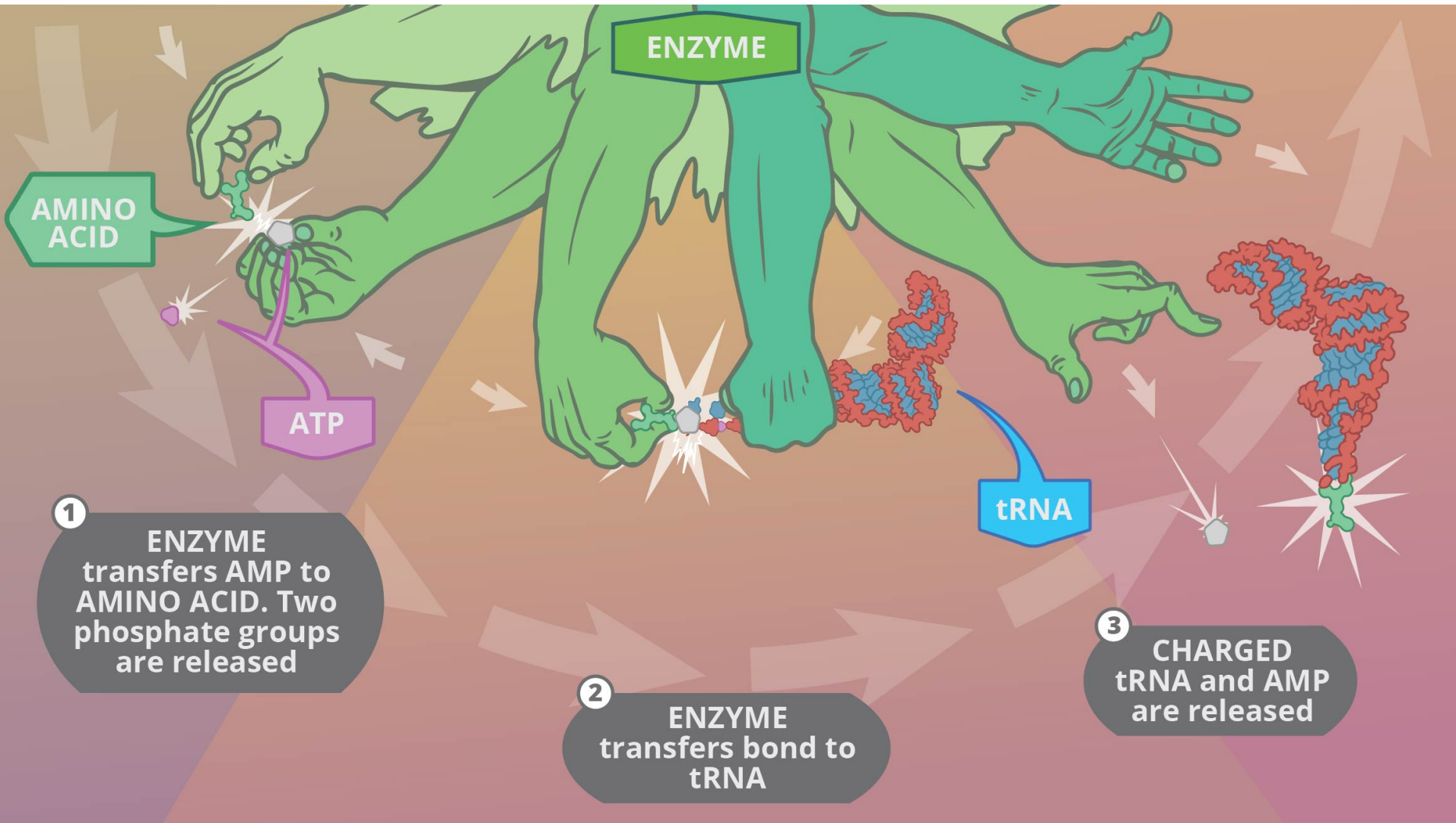
Just as a standard battery can
power multiple devices...



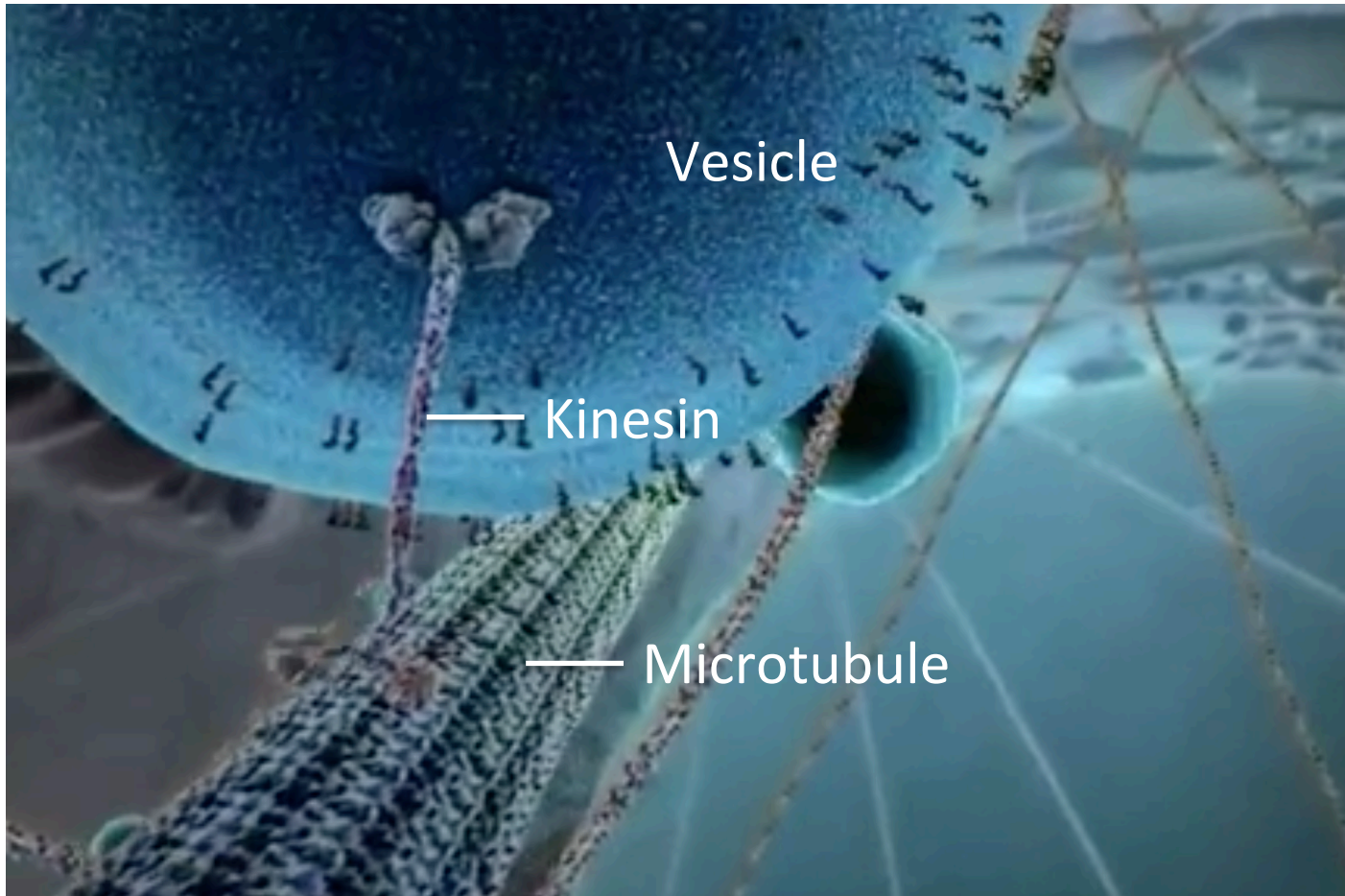
ATP powers nearly every process in all living things



Energy from ATP fuels Chemical Reactions

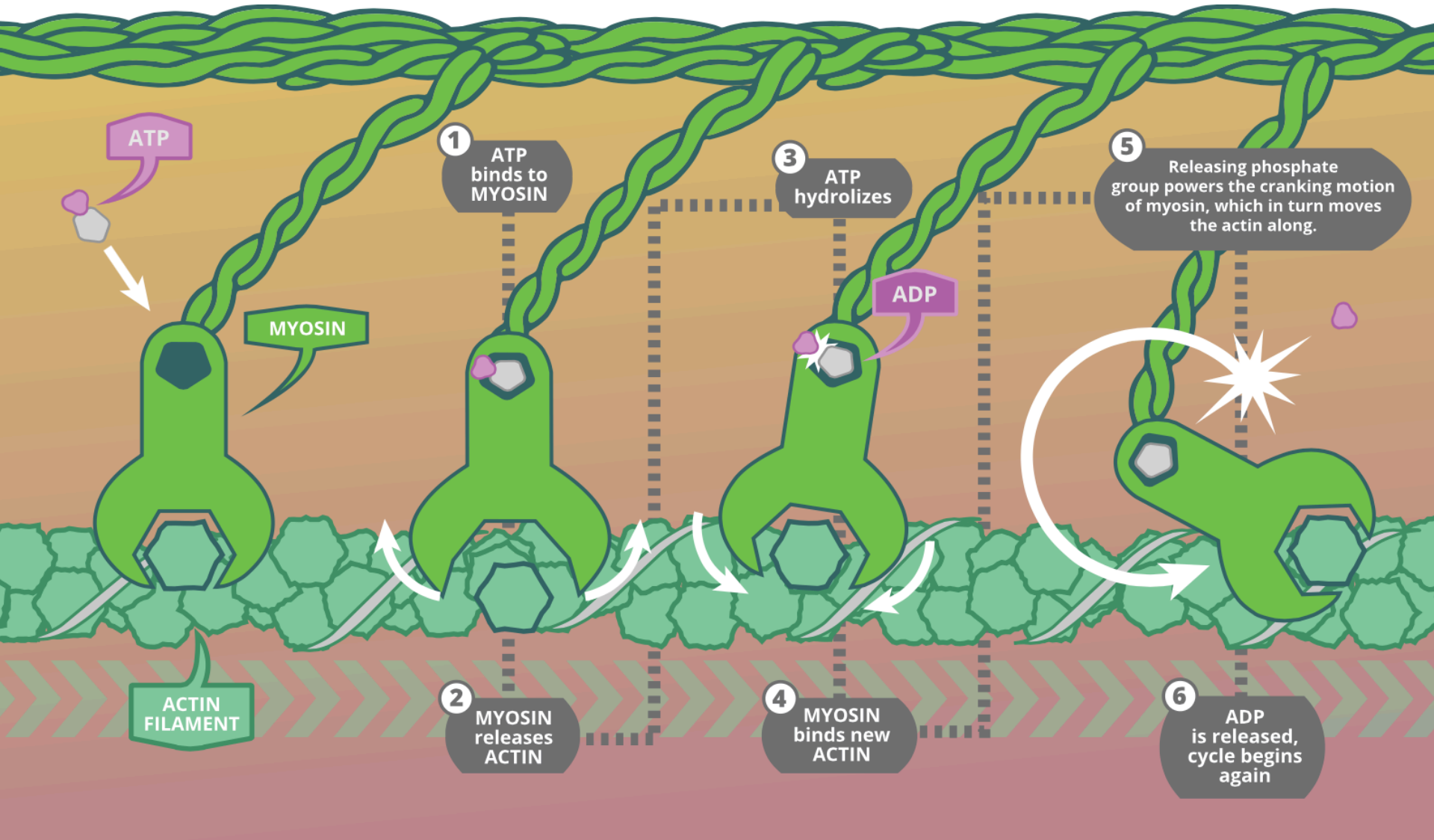


Energy from ATP moves things inside the cell

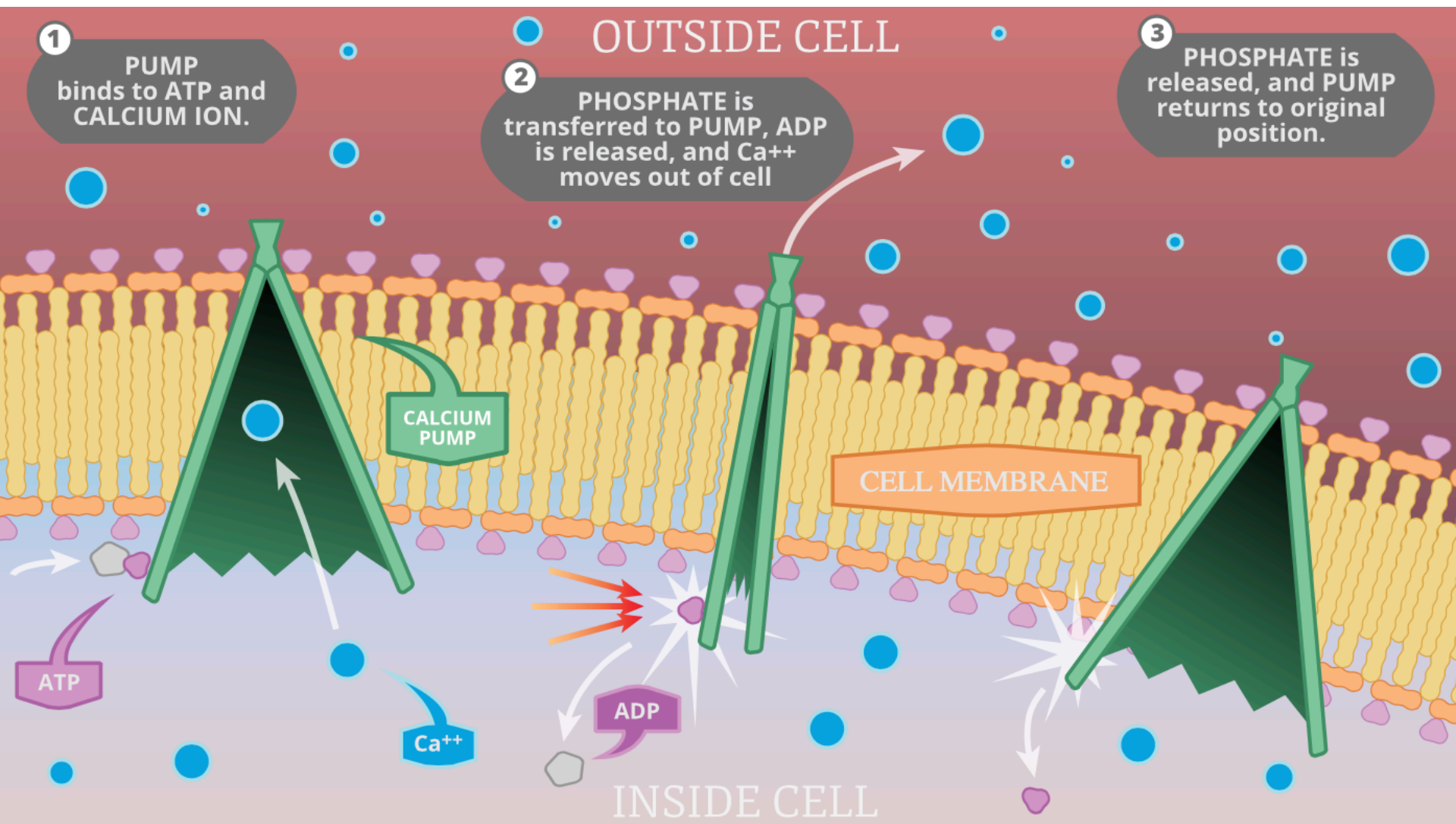


Inner Life of the Cell: Link to video

Energy from ATP moves things inside the cell



Energy from ATP transports molecules across membranes

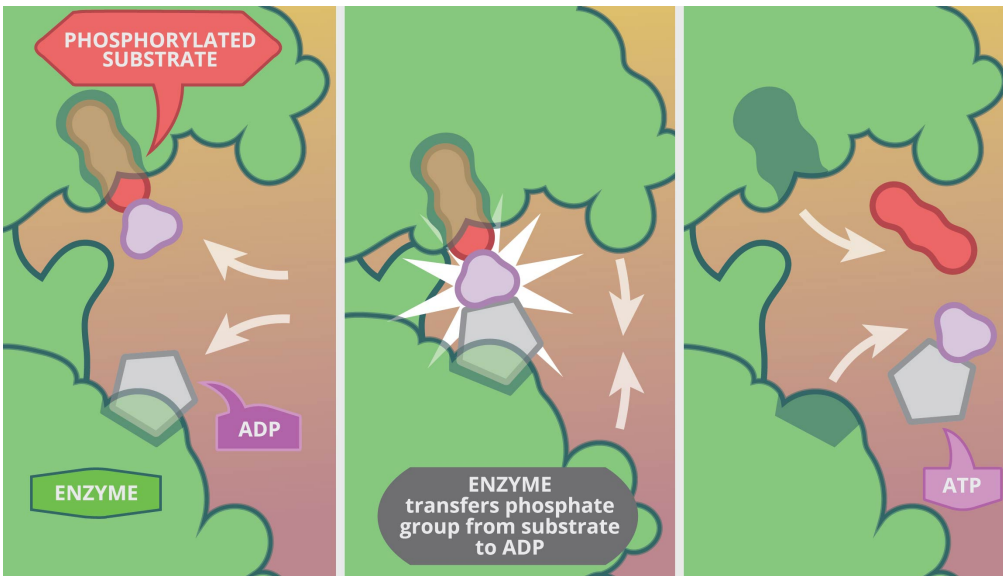


Calcium pump — active transport

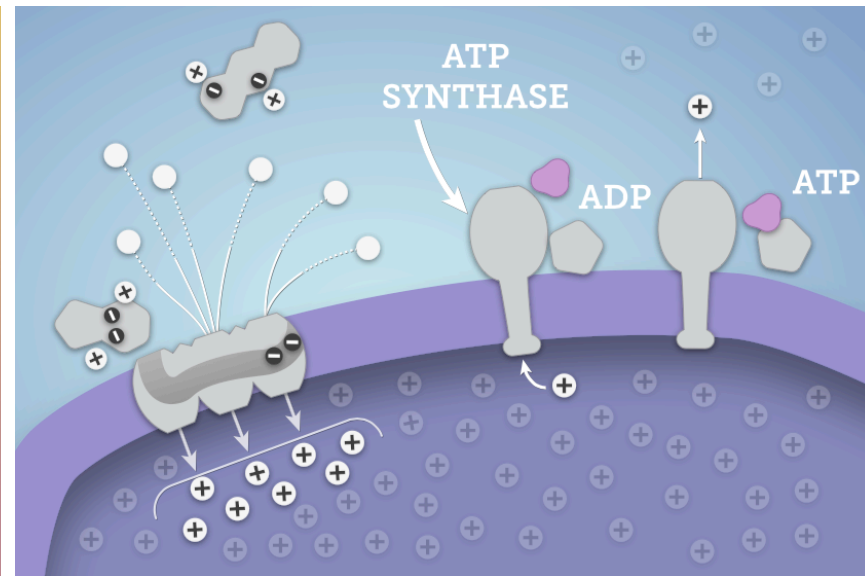


ATP is Recyclable

After ATP loses a phosphate (releasing energy), the cell recharges it by adding another phosphate.



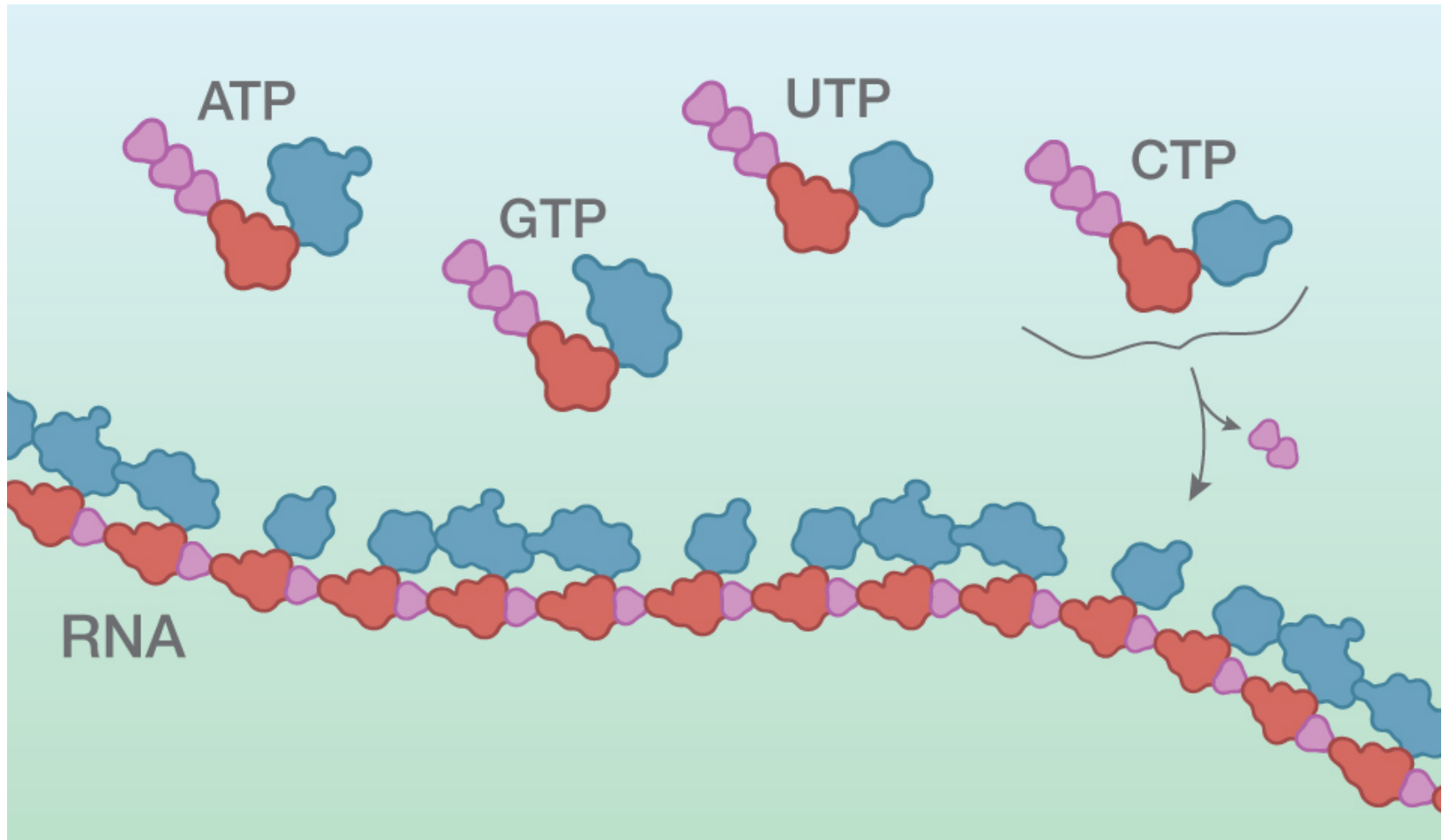
Substrate-level phosphorylation



Oxidative phosphorylation



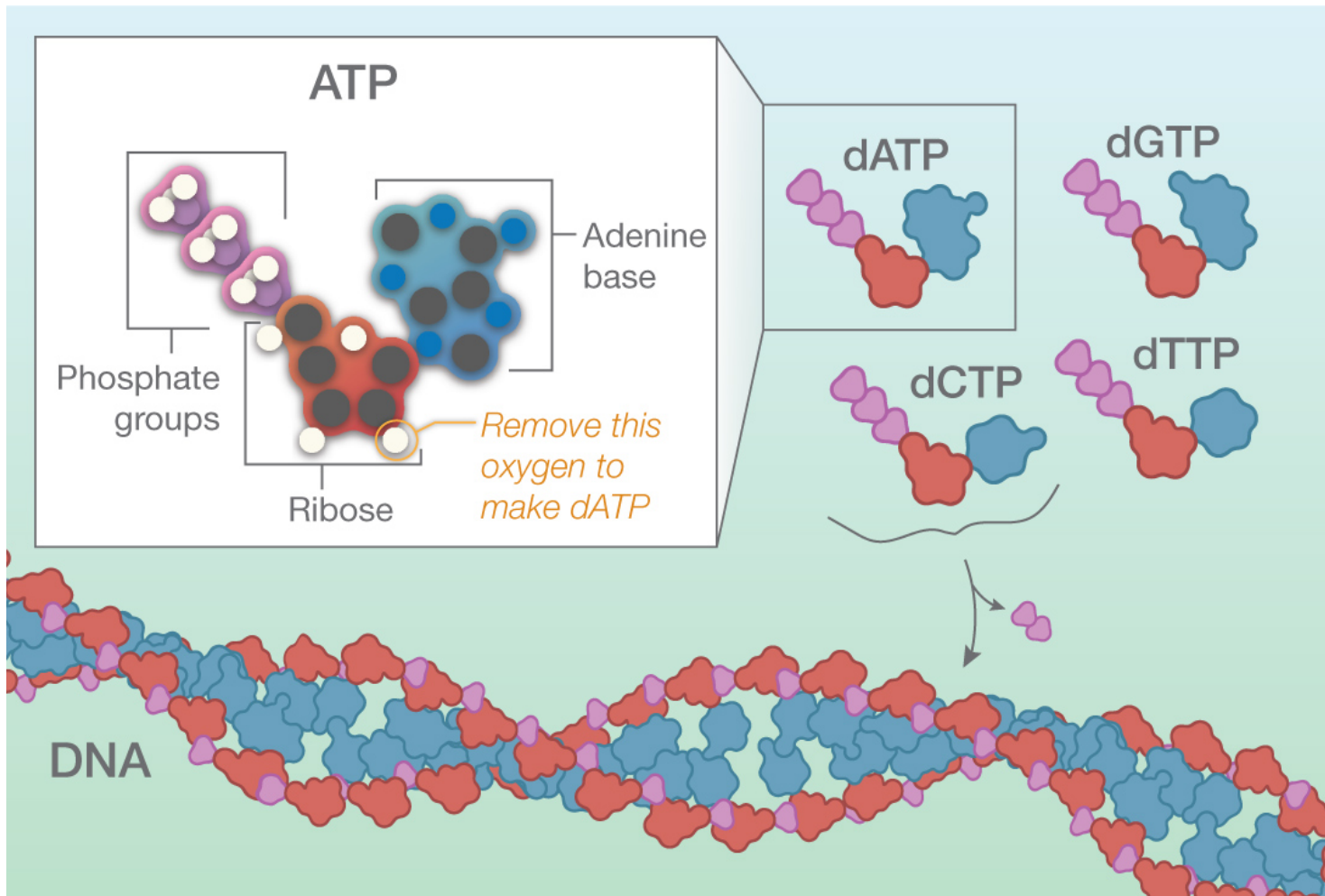
ATP is also a building block



ATP is a nucleotide, one of the building blocks of RNA



ATP is also a building block



dATP is one of the building blocks of DNA



In a sense, ATP rebuilds itself

- Information from DNA is copied in RNA
- RNA contains ATP
- Cells read RNA to build proteins
- Proteins build ATP