- Use oxygen and release CO2: hence process is cellular respiration
- Inner membrane folded to form little shelves called cristae
- ^ project into matrix (inner space filled with gel-like fluid)
- ^ matrix contains enzymes to break down glucose
- ATP then formed at cristae where there is an assembly line of protein complexes to aid energy conversion
- Theory says they were originally prokaryotes engulfed by cell since they have double membrane, own genes and reproduce themselves

Cellular Respiration

- Metabolism containing a series of reactions each requiring an enzyme
- Regulated by the cell by feedback inhibition in which a product reacts with early enzyme
- Enzymes: metabolic assistant that speed up reaction. Its reactants are called substrates after which they are named, ex. lipids broken down by lipase. Have specific regions called active sites where substrates are brought together to react
- Coenzymes are no protein molecules that help enzymes and sometimes contribute atoms; include vitamins; ex. NAD+ that carries H and electrons

1. Glycolysis: glucose split to 2 pyruvate releasing H and electrons (NADH results), 2 ATP, occurs in cytoplasm; anaerobic
2. If O2 available, pyruvate enters mitochondria and is completely broken down: after modification, pyruvate enters Krebs cycle as acetyl CoA; occurs in matrix; release Co2, some ATP (2 per glucose), remaining H and electrons are carried away by NADH
3. NADH takes electrons to electron transport chain (carrier proteins grouped in complexes, embedded in cristae of mitochondrion); electrons lose energy from carrier to other and then join oxygen and oxygen joins H to make H_2O; energy lost in carriers used to form ATP in inner mitochondria membrane that has ATP-synthase complex; produces around 32 ATP
4. If no O2, fermentation happens. NADH gives H and electrons to pyruvate and makes it lactase and recycles into NAD+. When oxygen is available again, lactase changes back to pyruvate. Only produces 2 ATP per glucose

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