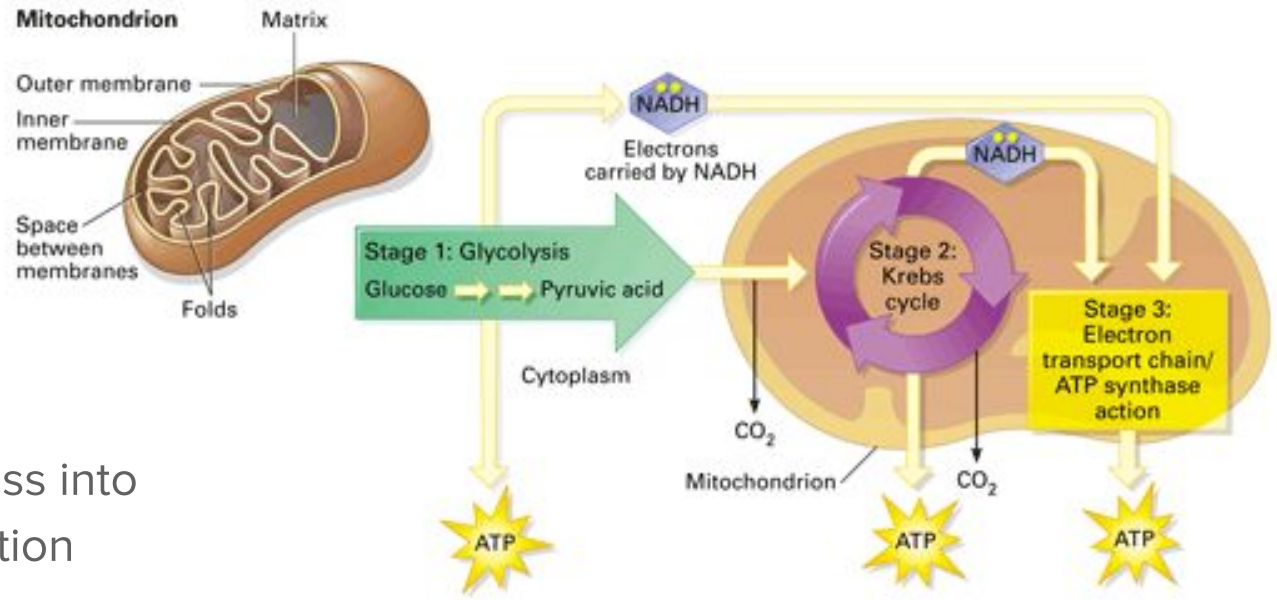
9.2 The Krebs Cycle

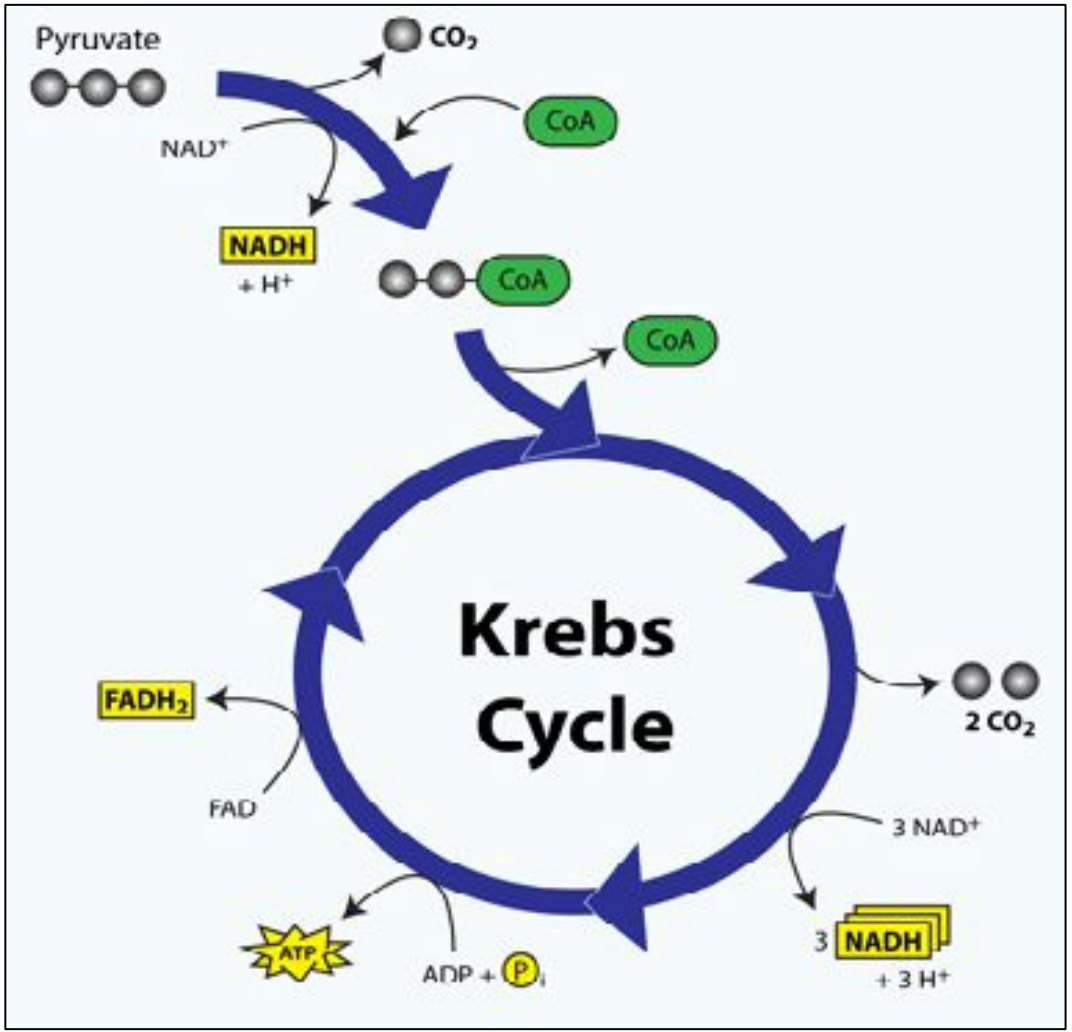
Respiration is used to describe “energy releasing pathways” in cellular processes, because it requires oxygen.

Cellular respiration is said to be **aerobic**, because it requires oxygen



After glycolysis, if oxygen is present, pyruvic acid will pass into the second stage of respiration called the **Krebs cylce**

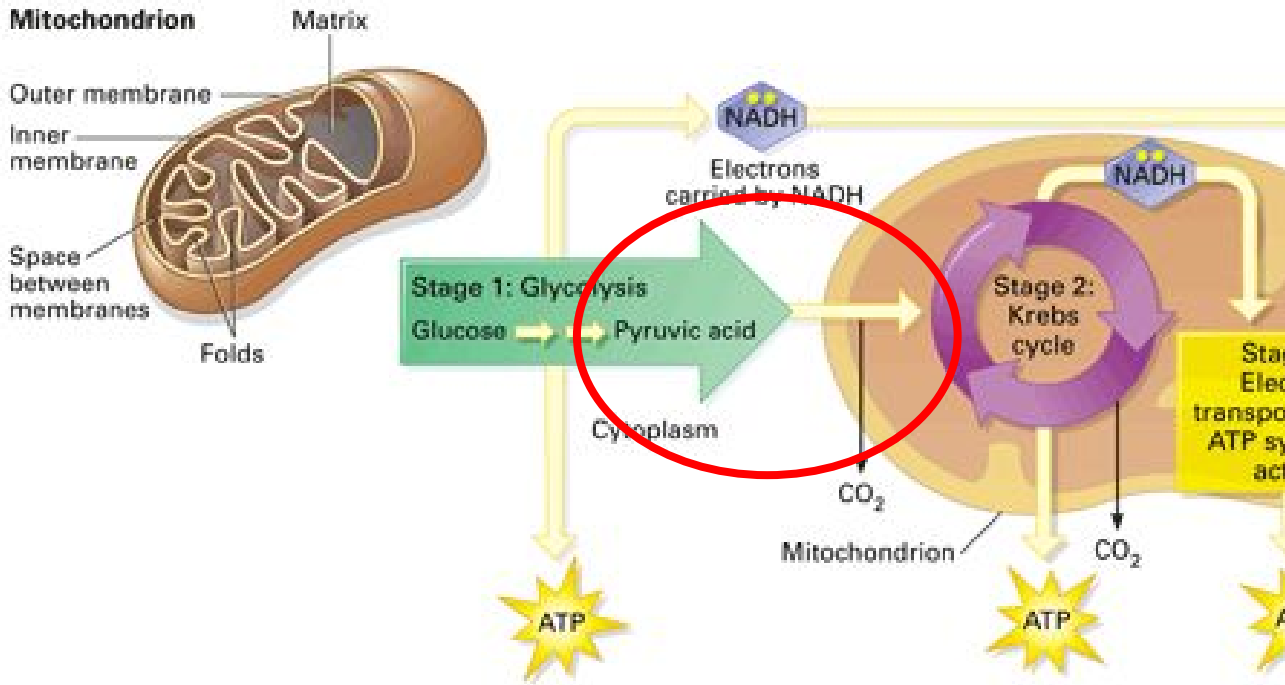
The Krebs cycle is named after Hans Krebs, a British biologist who discovered its existence in 1937.



During the Krebs cycle, pyruvic acid is broken down into carbon dioxide in a series of energy-extracting reactions.

Because citric acid is the first compound formed, it is also known as the citric acid cycle.

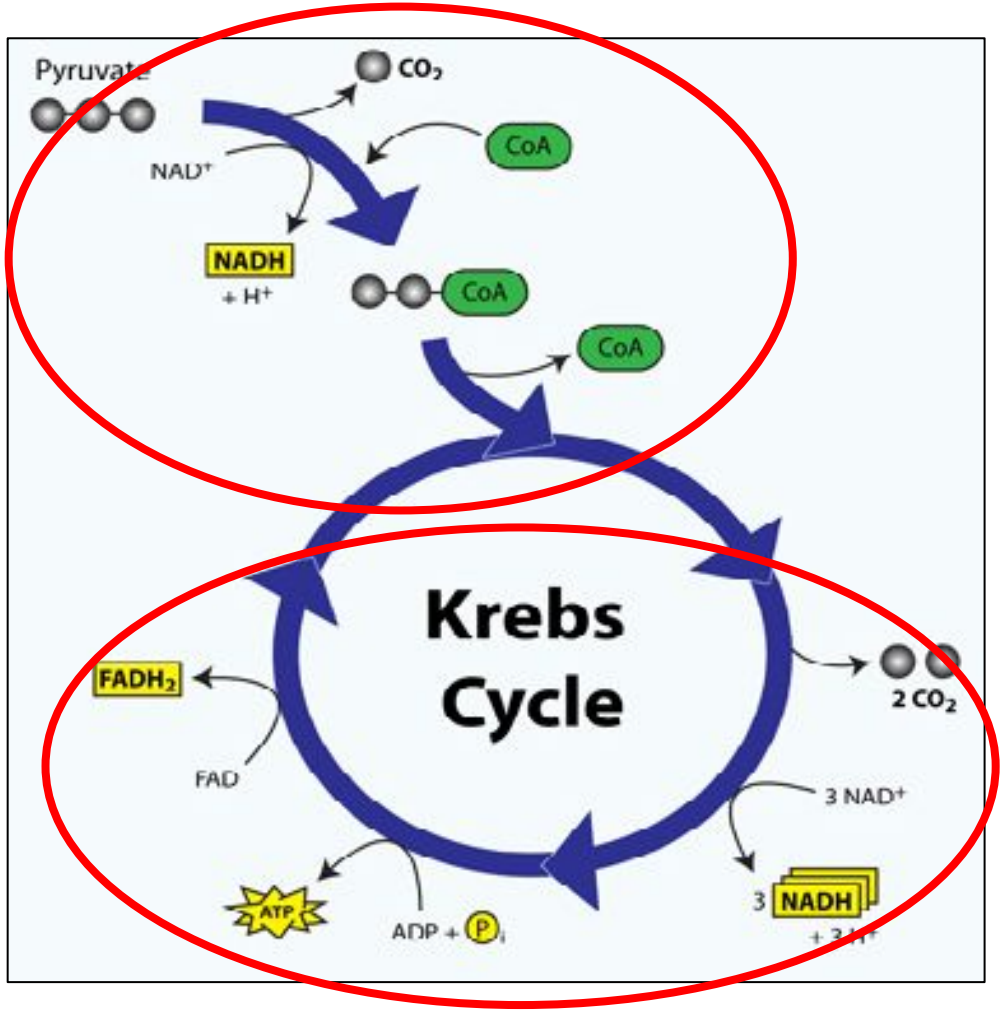
The Krebs cycle begins when pyruvic acid produced by glycolysis enters the mitochondria.



Step 1: 1 carbon atom from pyruvic acid gets released into the air. The other 2 carbon atoms are joined to a compound called coenzyme A to form acetyl-CoA.

Acetyl-CoA then adds 2 carbon acetyl groups to a 4 carbon molecule producing a 6 carbon molecule called citric acid

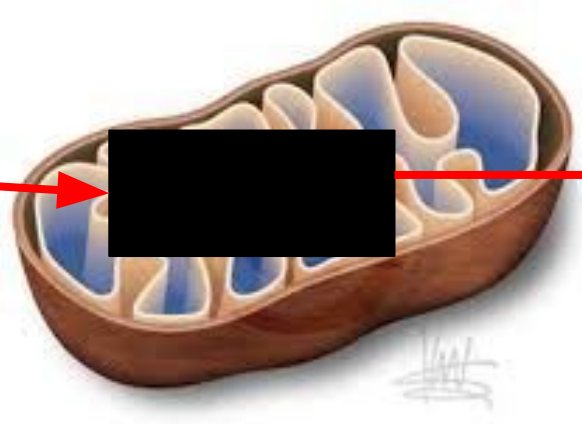
Step 2: Citric acid is broken into a 5 carbon compound, and then into a 4 carbon compound, releasing electrons to high-energy electron carriers and creating ATP along the way



Every time you exhale you expel the carbon-dioxide produced by the Krebs cycle.

The ATP produced from this cycle can be used for all cellular activities.

Pyruvic acid
(from glycolysis)



Carbon dioxide
ATP
Electron carriers= NADH and $FADH_2$

Electron carriers are then sent to the electron transport chain to produce even more ATP.