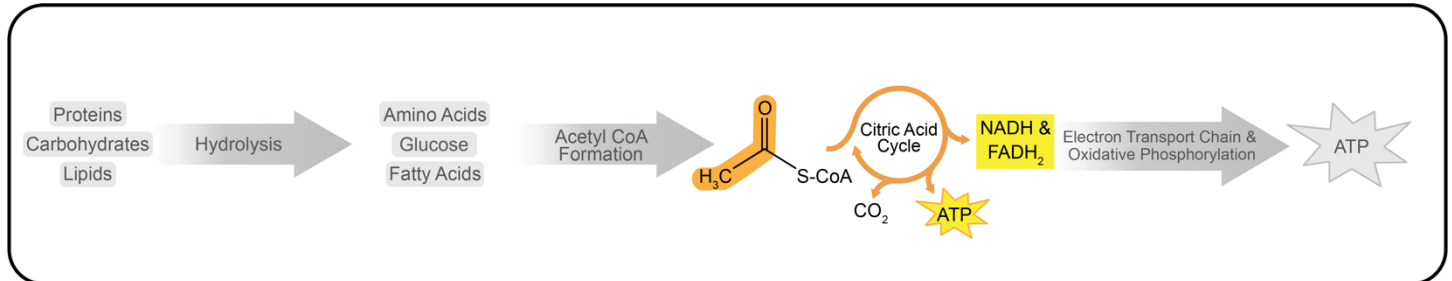


## CONCEPT: INTRO TO CITRIC ACID CYCLE

- The citric acid cycle (aka Krebs cycle or \_\_\_\_\_ cycle) is a central stage in energy generation from food.
  - Oxidizes the **acetyl group** of **acetyl CoA** to produce high-energy molecules (ATP, \_\_\_\_\_, & \_\_\_\_\_).



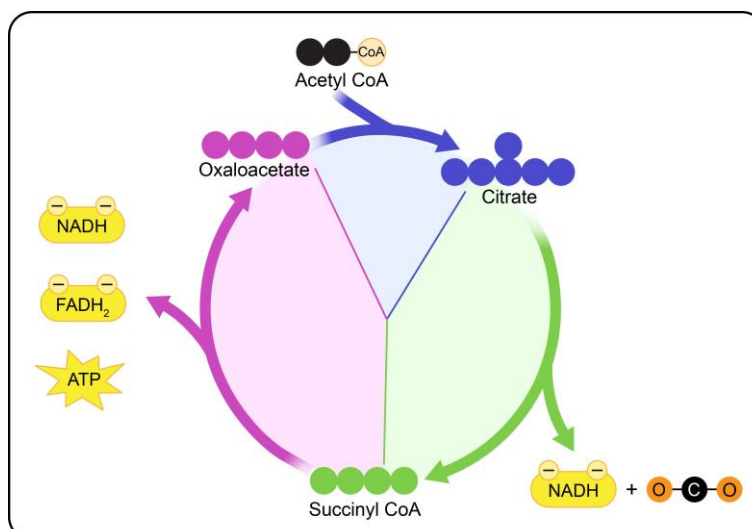
- **NADH** and **FADH<sub>2</sub>** are utilized in the electron transport chain to produce energy required for \_\_\_\_\_ synthesis.

**EXAMPLE:** Which one of the following statements about the citric acid cycle is incorrect?

- The CO<sub>2</sub> produced from the citric acid cycle is a product of oxidation.
- The citric acid cycle oxidizes the acetyl group of acetyl CoA to produce energy.
- Oxidation reactions in the citric acid cycle produce coenzymes NAD<sup>+</sup> and FAD.
- The citric acid cycle is a part of the common metabolic pathway.

## Phases of the Citric Acid Cycle

- The citric acid cycle consists of multiple steps, which can be grouped into \_\_\_\_ phases:
  - Citrate Formation:** the acetyl group from acetyl CoA reacts with \_\_\_\_\_ to produce citrate.
  - Succinyl CoA Formation:** \_\_\_\_\_ and oxidation reactions convert citrate into succinyl CoA.
    - Produces NADH and CO<sub>2</sub>.
  - Oxaloacetate Regeneration:** \_\_\_\_\_ and oxidation reactions convert succinyl CoA into oxaloacetate.
    - Produces NADH, FADH<sub>2</sub>, and ATP.



## **CONCEPT: INTRO TO CITRIC ACID CYCLE**

**EXAMPLE:** Identify each of the following statements about the citric acid cycle as true or false.

- a) \_\_\_\_ Phase C of the citric acid cycle includes reactions that regenerate oxaloacetate.
- b) \_\_\_\_ The first phase of the citric acid cycle uses acetyl CoA and oxaloacetate to produce citrate.
- c) \_\_\_\_ The citric acid cycle relies on reduction reactions to produce high-energy molecules.
- d) \_\_\_\_ Oxidation reactions in phase C produce CO<sub>2</sub>.

**PRACTICE:** Which one of the following substances is a part of both phases A and C of the citric acid cycle?

- a) Succinyl CoA
- b) Oxaloacetate
- c) Acetyl CoA
- d) Citrate