

## Krebs Cycle

## Glycolysis Extracts a Small Portion of Energy Stored in Glucose

~10% getting to pyruvate

## Krebs Cycle

AKA tricarboxylic acid (TCA) cycle

AKA citric acid cycle

Importance- extract much more energy than glycolysis

Location- mitochondrial matrix, IMM

## PDH Complex

"bridge" between glycolysis and TCA cycle  
know net rxn

## Reactions of Krebs Cycle

- Know the name and structure of all molecules involved
- Know all required coenzymes and cofactors
- Know a reasonable name of all enzymes
- Know which enzymes are regulated and by what substances

## Citrate Synthase

Aconitase

Isocitrate Dehydrogenase

$\alpha$ -Ketoglutarate Dehydrogenase

Succinate Thiokinase

- AKA succinyl CoA synthetase

Succinate Dehydrogenase

Fumarase

## Malate Dehydrogenase

## Regulation of Krebs Cycle

- ?Where?
- 4 regulated steps and their activators/inhibitors

## Energetics of Krebs Cycle

- NADH worth 3 ATP
- GTP worth ATP (NDPK)
- FADH<sub>2</sub> worth 2 ATP
- 1 "turn" (1 acetyl CoA) worth 12 ATP
- efficiency vs. wasted energy

## Mitochondrial Transporters

Pyruvate transporter  
citrate transporter (tricarboxylate)- important later  
OAA No transporter!  
36 vs. 38 : glycerol phosphate vs. malate

## The Glyoxylate Cycle

plants  
"shunt" of TCA cycle  
allows for conversion of fat to carbo  
plant seed germination