Approximate yield of ATP from oxidation of 1 mol of glucose

**Translocated Protons per Glucose**
- From Oxidation of 10NADH + 2 Succinate
  - 112
- Less for transport of 2 NADH in shuttle
  - -2
- Less for transport of 2 Pi for formation of GTP in TCA cycle
  - -2
- **NET yield of translocated protons from 1 mol of glucose**
  - 108

**Retrolocated Protons per mol. of ATP**
- Assume 10 protons drive formation of 3ATP in 1 revolution of Fo
  - Add 3 **needed for transport of 3 Pi to form 3ATP**
  - **Total of 13** needed for formation of 3ATP
- Hence 108 will drive formation of (108x3)/13 = 26 ATP
- Add 2 ATP formed from GTP in TCA cycle
  - 2
- Add 2 ATP formed in Glycolysis in the cytoplasm
  - 2
- **Total ATP formed per mol. of Glucose = 29**

**Aerobic Oxidation of Glucose**
- Using Malate-Aspartate Shuttle
- \( \text{C}_6\text{H}_12\text{O}_6 + 6\text{O}_2 \rightarrow (29\text{ADP} + 29 \text{Pi}) \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \sim (29 \text{ ATP} + 29 \text{ H}_2\text{O}) \)

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