

# Life without Oxygen

CHEM-643 Intermediary Metabolism  
Written by Harold B. White

## Page 2 - Anaerobic Oscillations

While our arms and legs can survive oxygen deprivation for an hour or more, our brains are absolutely dependent on oxygen. Within less than 10 minutes, irreversible damage occurs. Unlike us, yeast thrives with or without oxygen. However, some metabolic switching must occur in the transition from one to the other. The figure below shows the changes in concentration of NADH (fluorescence trace) and adenine nucleotides for an aerobic suspension of yeast after suddenly being deprived of oxygen.

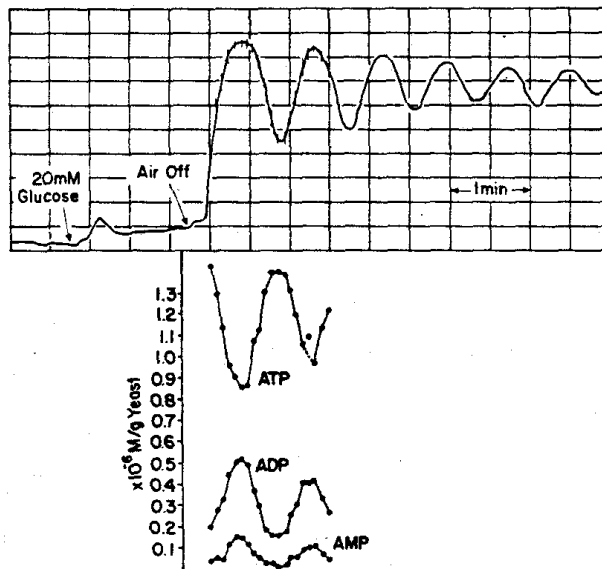


FIG. 1. Fluorescence trace of yeast cells (74 mg/ml) proceeding to anaerobiosis. At the points indicated, samples have been taken and analyzed for ATP, ADP, and AMP, as indicated below.

1. Make a list of 10 clearly stated observations about these data.
2. Make a list of 10 questions about the experiment and these data?
3. What would be some interesting experiments you might do with a system like this?