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Further Investigation of How and Why the Lipid Bilayer Composition of Escherichia coli (E. coli) Differs in Aerobic and Anaerobic Environments

Escherichia coli (E. coli) is a highly studied bacterium because it is easy to grow and can grow in aerobic and anaerobic conditions. E. coli cells are surrounded by a lipid bilayer to help facilitate what can enter and leave the cell and to help protect it from the environment. Lipids are very sensitive to energy levels in a cell and therefore can give insight into metabolic stress in cells. Last summer I determined that the lipid composition of E. coli lipid membranes is different when grown in aerobic versus anaerobic conditions. Experiments since then have been done and it has been determined that the lipid composition changes quickly once E. coli cells are transitioned from aerobic to anaerobic environments. This shows that lipid synthesis and metabolism of the lipid bilayer of E. coli is affected by whether oxygen is available.

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