Journal of Emerging Investigators
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Biochemistry: Amino Acid Effects on Amylase Production

Paper citation: Liu KS and Franckowiak B (2016). The Effects of L-glutamate, L-glutamine, and L-aspartic Acid on the Amylase Production of *E. coli* Transformed with pAmylase. J Emerging Investigators *73*: 1-6

Paper questions

In reading through the assigned papers, please answer the following questions:

1. What's the central question being investigated by the researchers?

2. What does the introduction tell you about important concepts needed to understanding the experiment? In particular, what did you learn about amino acid synthesis and amylase enzymes?

3. Which of the 4 major macromolecules of life were mentioned in this paper? List their monomers and polymers as they apply here.

4. Explain the principles behind these critical experiments used in this paper:
   -Transforming the amylase into *E. coli*
   -Amylase activity assays
   -Measuring the ratio of amylase and CFU

5. What are the controls for the experiment? Did they use enough controls?

6. Why do the authors think that L-glutamate and L-glutamine can lead to increased amylase production?

7. What other experiments can you propose to strengthen the results of this paper? Try to think of one that could be done in your classroom and one that could be done at a university lab with access to any equipment you might deem necessary.

8. What is one potential pitfall of studying the effects of L-glutamate, L-glutamine, and L-aspartic acid on human protein production in a bacterial system?

9. What are some shortcomings of this paper? Are the semi-quantitative experiments they used enough to support their results?

10. What is the big conclusion, or take-away message, the authors want the reader to remember?