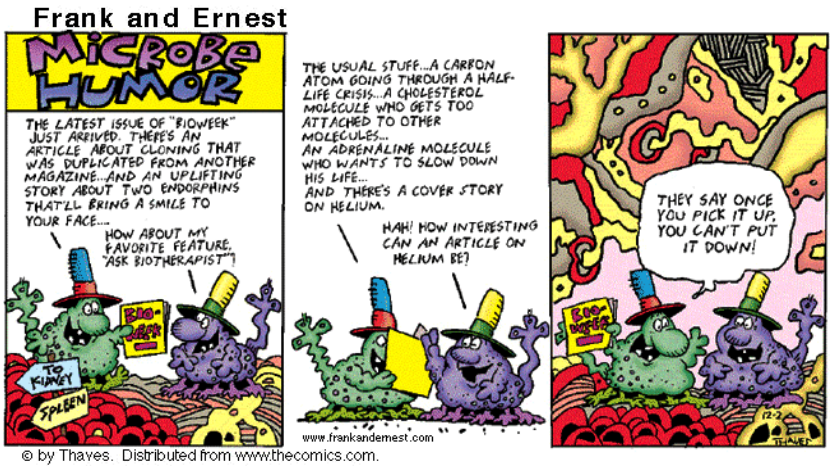
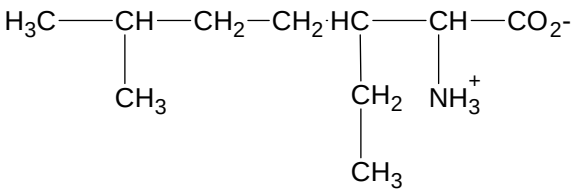
Recitation 12 Problems



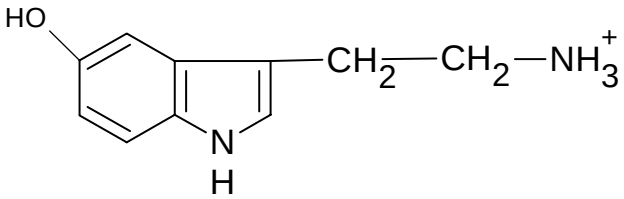
WARM UP QUESTION (From 1993 Exam)

Show how the compound below could be converted to 3 mols of acetyl CoA and 1 mol of acetoacetate.



QUESTION 1 (Brief concept question)

Show how tryptophan could be converted into the neurotransmitter serotonin (show below) with the use of enzymatic reactions of the type presented in class. In presenting your answer, please use structural formulas to show intermediates and identify any coenzymes that may be needed. You do not need to show mechanisms.

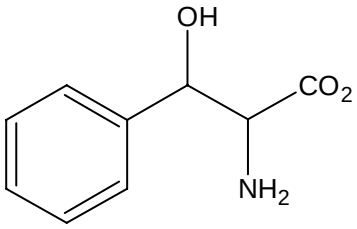


QUESTION 2 (Do not show mechanisms for now, the full solution is in pset 10)

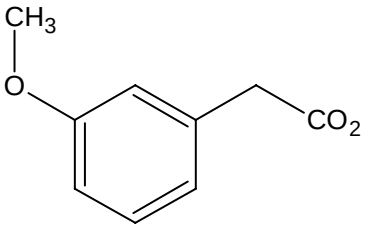
Recitation 12 Problems

Indicate how the compound shown below could be produced enzymatically from ß-hydroxyphenylalanine and any other compounds that may be needed. Please use enzymes of the type discussed in class. In giving your answer, use structural formulas for any proposed intermediates and identify any coenzymes that may be needed. If you believe that a derivative of Vitamin B6 is needed, please include the mechanism of any proposed reaction. Hint: α-ketoglutarate is not needed.

QUESTION 3 (Exam 3, 1998)

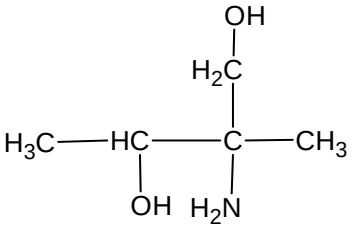


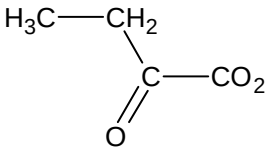
β–Hydroxy Phenylalanine



Target

Assume that the metabolism of the compound shown below results in the production of α-ketobutyrate and also allows the conversion of norepinephrine to epinephrine. Present a set of enzymatic reactions that would allow these end products to be produced. Please give the mechanisms of each enzymatic reaction that you present which requires the participation of the coenzyme form of vitamin B_6. Note: no transamination takes place.





alpha Ketobutyrate