Chem 412 Seminar
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The Molecular Basis of PKU

Phenylketonuria (PKU) is a classic genetic disease that arises from defects in a single enzyme, phenylalanine hydroxylase (PAH). PAH catalyzes the rate-limiting step in the catabolism of phenylalanine. It hydroxylates phenylalanine to tyrosine using molecular oxygen and a cofactor, tetrahydrobiopterin. Defects in PAH lead to hyperphenylalaninemia, a build up of phenylalanine in the blood and tissues, since it is responsible for 75% of phenylalanine's disposal. Through mechanisms widely unknown, increased phenylalanine levels lead to severe mental retardation and other neurological problems. Thus far, treatment for PKU has consisted of a restricted diet absent of phenylalanine. Compliance with this rigid diet is difficult, especially since it is for life. Much research has been done on the structure and function of PAH, hopefully to develop a new treatment plan. This seminar will review what is currently known about PAH, some specific mutations that cause PKU and some of the discoveries that have come out of the research thus far.

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