

# Vitamin B9

Terpene to a PABA to a B2 Riboflavin fragment (minus the Benzene Ring)

## Folate

2S)-2-[(4-[(2-amino-4-hydroxypteridin-6-yl)methyl]amino}phenyl)formamido]pentanedioic acid

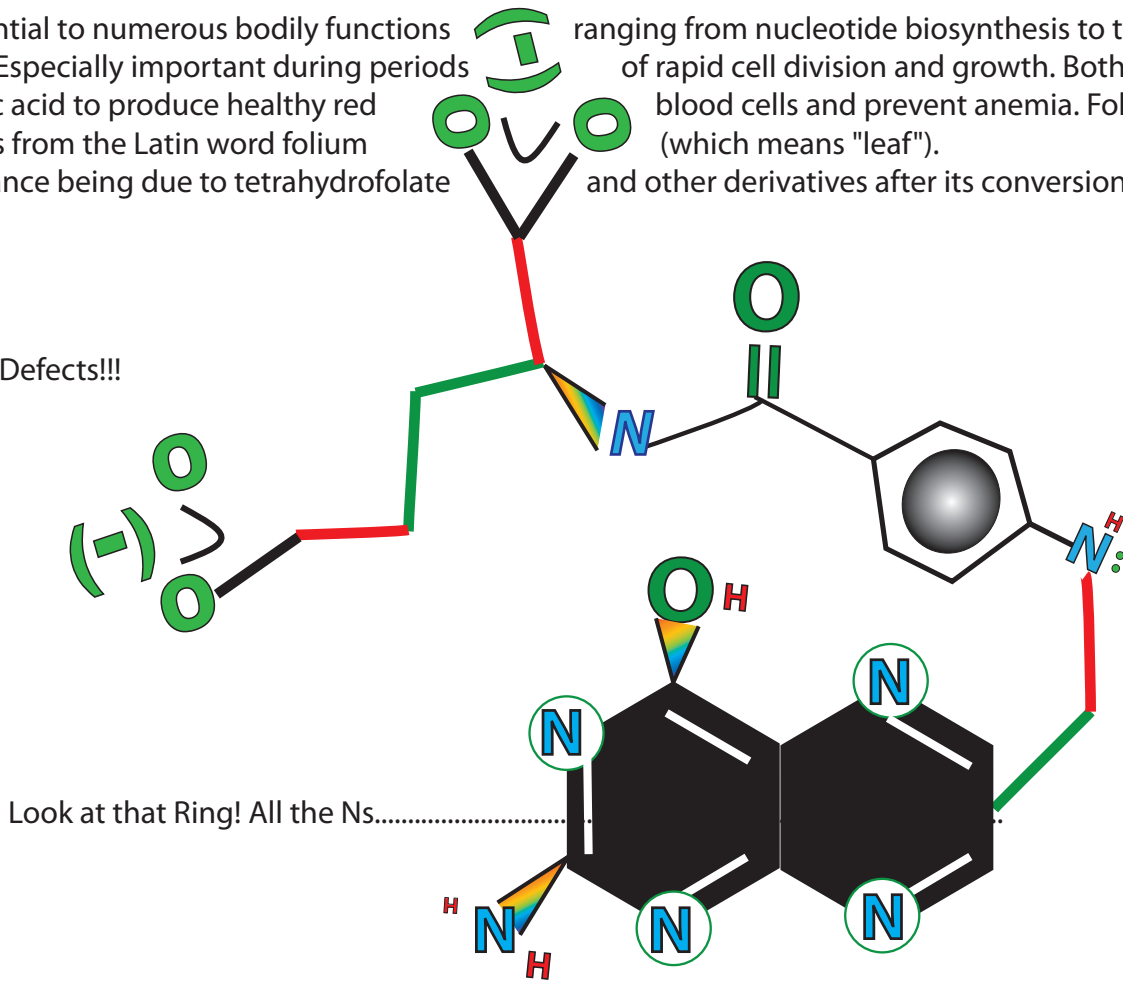
N-(4-[(2-amino-4-oxo-1,4-dihydropteridin-6-yl)methyl]amino}benzoyl)-L-glutamic acid;  
pteroyl-L-glutamic acid; Vitamin B9; Vitamin M; Folacin

Folic acid (aka vitamin B9[1] or folacin) and folate (the naturally occurring form), as well as pteroyl-L-glutamic acid and pteroyl-L-glutamate, are forms of the water-soluble vitamin B9. Folic acid is itself not biologically active with its biological importance being due to tetrahydrofolate and other derivatives after its conversion to dihydrofolic acid in the liver.

Vitamin B9 is essential to numerous bodily functions of homocysteine, Especially important during periods adults require folic acid to produce healthy red derive their names from the Latin word folium biological importance being due to tetrahydrofolate acid in the liver.

ranging from nucleotide biosynthesis to the remethylation of rapid cell division and growth. Both children and blood cells and prevent anemia. Folate and folic acid (which means "leaf"). and other derivatives after its conversion to dihydrofolic acid in the liver.

Neural Tube Defects!!!



Folate is necessary for the production and maintenance of new cells. It is especially important during periods of rapid cell division and growth such as infancy and pregnancy. Folate is needed to synthesize nucleic acids (most notably thymine, but also purine bases). Thus, folate deficiency hinders DNA synthesis and cell division, affecting hematopoietic cells and neoplasms the most because of rapid cell division. RNA transcription, and subsequent protein synthesis, are less affected by folate deficiency, as the mRNA can be recycled and used again (as opposed to DNA synthesis where a new genomic copy must be created). Since folate deficiency limits cell division, erythropoiesis, production of red blood cells is hindered and leads to megaloblastic anemia which is characterized by large immature red blood cells. This pathology results from persistently thwarted attempts at normal DNA replication, DNA repair, and cell division, and produces abnormally large red cells called megaloblasts (and hypersegmented neutrophils) with abundant cytoplasm capable of RNA and protein synthesis, but with clumping and fragmentation of nuclear chromatin. Some of these large cells, although immature (reticulocytes), are released early from marrow in an attempt to compensate for the anemia. Both adults and children need folate, make normal red and white blood cells and prevent anemia. Deficiency of folate in pregnant women has been implicated in neural tube defects (NTD); therefore, many developed countries have implemented mandatory folic acid fortification in cereals, etc. It must be noted that NTD's occur early in pregnancy (first month) therefore women must have abundant folate upon conception.