

Project Description:

Objectives: The objective of the project is to study the biochemical step required for synaptogenesis in chick embryo retina.

Major Findings: Two pathways for γ -aminobutyric acid synthesis were found in chick embryo retina. The first pathway depends upon the conversion of putrescine to ornithine decarboxylase and the subsequent conversion of ornithine to γ -aminobutyric acid. The second route of synthesis is dependent upon the conversion of glutamic acid to γ -aminobutyric acid, catalyzed by glutamic acid decarboxylase. Elevation of cAMP levels in neuroblastoma cells was shown to induce ornithine decarboxylase activity. Thus, in the developing embryo, neurotransmitters which affect cAMP levels may regulate ornithine decarboxylase activity and thereby control the rate of GABA synthesis from ornithine.

Proposed Course: To determine the effect of retina neurotransmitters and other compounds on retina synaptogenesis.

Publications:

1. DeMello, F. G., Bachrach, U. and Nirenberg, M.: Ornithine and glutamic acid decarboxylase activities in the developing retina. J. Neurochem. In Press.