Cell differentiation during development is an expression of orderly and sequential gene regulation. Accumulation or loss of gene products, e.g. structural and functional proteins, prepares the tissue for the next stage of development resulting in well observed functional differentiation. Sometimes re-expression of certain fetal antigens during oncogenesis has proved invaluable in diagnosis of malignancy. Alpha-fetoprotein (AFP) is an important serum glycoprotein of this category. It is synthesized by the cells derived from endoderm - like yolk sac and liver, early in fetal development. AFP and albumin are good differentiation markers. They bear a reciprocal relationship during ontogeny. Probably this reason has prompted some investigators interested in its function to call it as 'fetal albumin'.

Ontogeny of AFP and albumin were investigated in different tissues of rat and human brain and the following leads were obtained.

1. A simple method based upon immunoabsorption of proteins other than AFP from amniotic fluid followed by DEAE-cellulose chromatography was developed for the isolation of rat and human alpha fetoprotein. This procedure gives high yield of AFP (87%) and may also find applications
in the isolation of other phase specific antigens like carcino-embryonic antigen and uteroglobin.

2. Distinct ontogeny of AFP in human fetal brain, and feto-neonatal rat brain suggests that these tissues may form independent pools of AFP probably contributed by its in situ synthesis.

3. Cells and tissue explants from developing rat brain and skin have been found to synthesize and secrete estrophilic AFP in culture. AFP secreted by these tissues is immunologically, electrophoretically and with regards to molecular weight and estradiol binding similar to serum AFP. Brain cells from developing rat also synthesize albumin.

4. Age related decline in brain and skin AFP levels reflects a proportionate decrease in the rate of synthesis of the protein. Synthesis of AFP is turned off after 7,14 and 21 d of postnatal life in brain, skin and liver of rat.

5. Dexamethasone and dbcAMP are negative regulators of AFP synthesis in different tissues with differing sensitivity.

From the foregoing it appears that expression of AFP and albumin genes is a useful tool for understanding tissue differentiation. Although final proof is still awaited, it appears that undifferentiated cells do express AFP gene. It would be of interest to quantitate mRNA$_{AFP}$ levels in different tissues during development. Further, demonstration of factors that control the switch off of AFP gene during development and switch on during hepatic injury or carcinogenesis may provide some clue to mechanism of tissue differentiation as well as malignancy.