AAO Foundation Award Final Report

Principal Investigator	James Mah
Co-Investigator	
Secondary Investigators	
Award Type	Orthodontic Faculty Development Fellowship
Project Title	"When is a Child Growing? Studies on the Dynamic Cellular and Molecular Events of the Developing Skeleton"
Project Year	1998
Institution	Harvard School of Dental Medicine and University of Southern California
Summary/Abstract	The purpose of this research was to develop and apply biochemical assays to measure growth activity of the developing human skeleton. This research could benefit many areas in both medicine and dentistry. In orthodontics, these techniques may provide for more accurate growth assessments and predictions. We developed a serum enzyme-linked immunosorbant assay (ELISA) for a bone matrix protein associated with mineralization and bone growth, namely bone sialoprotein (BSP). In addition we used other serum markers; bone specific alkaline phosphatase (bAP), N-telopeptide of type I collagen to crosslink (NTx), and 1,25 dihydroxyvitamin D3 as well as the urinary markers N-telopeptide of type I collagen to crosslink (Ntx) and deoxypyridinoline (Dpd) to evaluate the biochemical events in children during the skeletal growth. We found that all of the above markers except for 1,25 dihydroxyvitamin D3 correlated with skeletal growth but this correlation was not statistically significant ($p<.05$). We conclude that these markers may be useful to evaluate skeletal growth, however large population studies will be required to establish clinical significance.